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digital VIDEO
vol. 20 | no. 3 03.2012

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PUBLISHED BY
NEWBAY MEDIA LLC
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New York, NY 10016
Tel: 212. 378. 0400
Fax: 212. 378. 0470
Web: www.nbmedia.com

EDITOR'S VIEW

RISK AND REWARD

Even if you didn't know anything about the making of *Act of Valor*, I think you'd like it—it has everything a viewer could want in an action-adventure movie: a nuclear submarine surfacing while Navy SEALs are dropped from helicopters onto its bridge; a remote African airstrip where villains meet to exchange money and weapons; and a pre-mission briefing where the senior officer starts with, "Look, these guys are total a**holes."

Once you know the story behind the film (our interview begins on page 18), I think you'll feel like I do: a little bit proprietary. I say that because it was created by "our" kind of people ... people who like to experiment with tools and technologies and see how far they can take them.

A fictionalized account of real-life U.S. Navy SEAL operations with active-duty SEALs, *Act of Valor* is a great representation of what "we" can do. It was shot almost entirely with Canon EOS 5D and 1D DSLRs (up to 12 cameras at a time), edited and managed with Avid Media Composer and Adobe Premiere Pro, and produced by a bunch of guys at Bandito Brothers who pretty much built each rung of the ladder just before stepping onto it.

The innovation and determination it took to capture and complete a film like this is, well, inspiring. For example, that submarine shot? "To shoot that scene, we were given GPS coordinates in the middle of the ocean," explains co-director Scott Waugh. "We had to coordinate our crew to meet the sub and shoot the entire sequence within a very limited window."

"The last thing those guys ever want to do is breach the surface," adds co-director Mike "Mouse" McCoy. "It gives away their position. The Navy told us they would breach for less than 45 minutes. We had to run it like a real mission out in the middle of the ocean. I was in full camouflage holding a camera with the guys on the boats. Scottie was in the helicopter above. Sure enough, here comes that thing on time and on target. That sub comes out of the water, and we ran those boats right up on the back of it, popped off and got it in one take."

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Digital Video (ISSN 1541-0943) is published monthly by NewBay Media L.L.C. at 28 E 28th Street, 12th Floor, New York, NY, 10016. Telephone: 212-378-0400. Periodicals postage paid at New York, New York, and at additional mailing offices. U.S. subscription rate is $29.97 for one year; Mexico and Canada are $39.97 (including GST); foreign airmail is $79.97; back issues $7. Prepayment is required on all foreign subscriptions in U.S. funds drawn on a U.S. bank. All rates are one year only. Digital Video, Videography, Digital Content Producer, Millimeter, Digital Cinematography, Cinematographer, 2-pop, Reel Exchange and Creative Planet Network are trademarks of NewBay Media L.L.C. All material published in Digital Video is copyrighted © 2012 by NewBay Media L.L.C. All rights reserved. **Postmaster:** Send address changes to Digital Video, Subscription Services, P.O. Box 221, Lowell, MA 01853. Return undeliverable Canadian addresses to Bleuchip International, P.O. Box 255542, London, ON N6C 6B2. Digital Video makes every effort to ensure the accuracy of all information published in the magazine; however, it assumes no responsibility for damages due to errors or omissions. Printed in the USA.

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UPDATE

DOCUMENTARY FILMMAKER FOCUSES ON 1930s AMERICA

Director/director of photography Jay Kriss used a Panasonic AJ-HP3700 P2 HD VariCam camcorder outfitted with Fujinon E-Series digital cinematography lenses for the production of *Harvesting the High Plains*, a historical documentary recounting the challenges faced by farmers during the 1930s Dust Bowl.

"This film greatly benefits from the depth of field, precision and clarity these lenses produce," Kriss says. "We really put them to the test by shooting for weeks under extreme production conditions. Besides temperatures exceeding 102 degrees, the lenses were continually subjected to the extremely hot, dry, dusty winds common to the plains of western Nebraska and western Kansas.

"We also pushed the lenses creatively," he continues. "We adjusted the camera's menus to shoot monochromatically and then affixed a Red 25 filter to the lens to obtain a high-contrast effect. Since the filter costs 4.5 stops, it was extremely advantageous to be able to open the lenses as far as possible, from T2.2 to T1.6, to maximize available light." This workflow allowed Kriss to shoot with a wide open lens, a style he prefers.

The finished film pulls together black-and-white establishing shots, historical footage, interview segments shot in color, and a black-and-white scene featuring actors in 1930s period dress operating vintage farm equipment to harvest a field of wheat. Currently in post, *Harvesting the High Plains* will be color graded to adjust and match the contrast and color temperatures of all scenes prior to 35mm mastering.

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For more about *Harvesting the High Plains*, visit www.dv.com/Mar2012

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THE ARTIST DEPENDS ON SCRATCH

During postproduction on *The Artist*, the black-and-white feature directed by Michel Hazanavicius, DuboiColor in France called on Assimilate's SCRATCH DI tool suite to conform the huge number of files and to create and export LUTs to aid in creating the film's stylized look.

"SCRATCH offered a fantastic end-to-end DI tool suite that enables a highly intuitive workflow," says Eric Martin, head of digital postproduction at DuboiColor. "The sophistication of its conform tool allowed us to rapidly conform the files and create several iterations within a highly organized structure. This is invaluable when you're working within a tight budget and deadline."

The Artist received 10 Academy Award nominations in categories including cinematography, directing, film editing, writing and best film.

Behiri Illuminates the Beauty of *Ballet*

For his new documentary, entitled *Just Ballet*, cinematographer Johnnie Behiri spent a year shooting a ballet class from the Vienna State Opera Ballet School.

"When it came to equipment, I kept my setup to a minimum so I would always have mobility and flexibility and not be in the dancers' way," says Behiri, who used a Canon EOS 7D on a Sachtler DV 8 SB tripod system. He lit the dancers with a Litepanels 1x1 fixture.

"Independent of what the lighting conditions were in the room and how much natural light came in from outside, I used the 1x1 as a key light, fill light or background light," he explains. "The combination of modern HDSLR film equipment and the versatile 1x1 enabled me to create the shots without exaggeration and to portray the protagonists in a very personal way."

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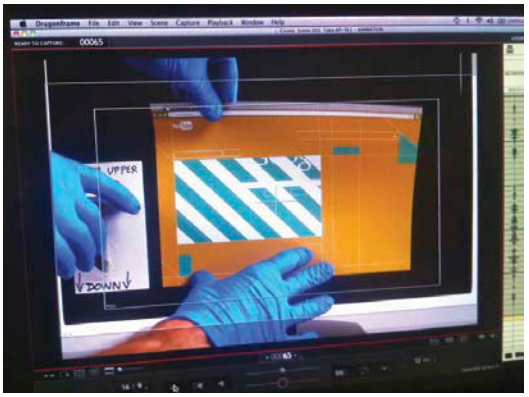
RICK KNIEF CREATES VIDEO MOSAIC WITH iPHONES

Director Rick Knief and Hooligan editor Thomas Ostuni teamed up to create a music video for "Over the Sun," the latest single from Joseph Arthur's *The Graduation Ceremony*. Featuring a stylized mosaic of nine interchanging and overlapping frames, the video was shot on a multi-iPhone rig, captured with iPhone and iPad apps, and edited in Apple Final Cut Pro.

"Dealing with multiple edits kept us on our toes as far as managing frames and organizing bins and dailies," says Ostuni, "but working in uncharted territory allowed us freedom to experiment and write the rules as we went."

Süperfad Animates Spot for Google Chrome Android



Süperfad delivered animation and graphics for a web spot announcing the Android version of Google's Chrome web browser. Crafting the tactile, stop motion-animated look of the video proved a creative challenge for director Nando Costa and his team. Like traveling backward through technological time, the Süperfad team began by creating a digitally animated version of the spot in Adobe After Effects. They then printed each frame on paper and applied traditional stop-motion techniques to the printed frames.

On the Creative Planet Network

DANCE WITH ZOMBIES IN INTERACTIVE VIDEO

The track "Sprawl II (Mountains Beyond Mountains)" by Arcade Fire has two music videos, both directed by Vincent Morisset. One is a traditional clip featuring zombie-like creatures dancing in the suburbs; the second uses the same footage but in a way that lets the user control the movements, either with webcam or mouse. Move slowly and so do the dancers; move faster and everything speeds up; stop altogether and the footage plays in a loop that ensures you'll never have the same experience twice when visiting *www.sprawl2.com*.

UNFOLDING THE WORLD OF *BUNRAKU*

Bunraku, the second film from director Guy Moshe, is a unique blend of computer graphics and choreographed live action, comic book and video game styles, gritty reality and fantasy, and samurai and spaghetti western genres. The crew filmed the live action entirely on greenscreen stages over a 12-week period at MediaPro Studios in Romania. Oliver Hotz, VFX supervisor on the film, led a team of artists at Origami Digital to craft the imaginative CG world with software from NewTek.

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ONE FINE DAY TRAVELS TO THE *HART OF DIXIE*

One Fine Day's show open for the CW romantic comedy *Hart of Dixie* distills the show's essence into 10 eye-catching seconds. The open begins with street-level shot, then pans up toward the skyline. A bright sunburst gives way to a tracking move past a "Welcome to Bluebell" sign and a country home. The sequence ends with an image of the show's lead, Rachel Bilson, seated on a suitcase in her new "Dixie" environment.

"The piece was constructed as one continuous camera dolly and pan, with a combination of live action, still photography and CG elements all arranged in 3D," explains One Fine Day co-creative director Chris Haak. "We designed a 3D animated panoramic sky throughout to provide continuity and tie all of these disparate elements together."

ROGER WILLIAMS MEDIA INVESTS IN AF100

Roger Williams, head of production company Roger Williams Media in Phoenix, recently invested in Panasonic's AG-AF100 camera for use on a variety of corporate video projects. Williams says the camera's shallow depth of field and the wider field of view enabled by its large imager enhance the image quality of his projects. Other benefits of the AF100 include the flexibility and cost advantages afforded by the use of a growing line of Micro Four Thirds lenses, filters and adapters.

"This affordable digital cinematography camera plays a crucial role here," Williams says. "The camera really maximizes the potential of its high-resolution imager, which is huge for us. The form factor of the AF100 makes it easy to transport and set up in tight spaces," he adds. "We can get in and get the shots quickly and easily."

Mothership Develops "Robotarm" for Cisco

Digital Domain provided pre-vis and visual effects services to Mothership and agency OgilvyWest for "Robotarm," a high-profile television spot that stars a cheerfully aware group of self-sustaining automotive assembly robots. The mechanical arms act as metaphor for Cisco's Intelligent Networks, which are so advanced that they can diagnose and repair themselves.

The nine robots who star in the all-CG spot spot emulate the look of classic factory machinery, but each is enhanced with unique characteristics. Mothership director David

Rosenbaum and OgilvyWest co-chief creative officers James Dawson-Hollis and Bill Wright approached the commercial as if it were a live-action shoot—but instead of working with cameras on set, they worked with Digital Domain's pre-vis team to direct the shots.

"From the beginning we knew we wanted to use a factory metaphor to tell the story of complex computer systems that can diagnose and fix themselves," says Rosenbaum. "Together with the OgilvyWest team we took that idea to a new place—doing away with a traditional assembly line, creating robots with distinct personalities and bringing them closer together so they could interact. In the end, I think we were able to humanize the technology and make it more understandable."

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Trending Online

(Links at www.dv.com/Mar2012)

RED HOT CHILI PEPPERS VIDEO LETS YOU "LOOK AROUND"

Having a single called "Look Around" seems like the perfect opportunity to create an interactive music video. That's exactly what the Red Hot Chili Peppers thought, too—their online video allows users to pan around, zoom in and discover hidden Easter eggs.

COLD-WAR INTRIGUE: INTERVIEW WITH EDITOR DINO JONSATER

"All films have a way they want to be cut," says *Tinker Tailor Soldier Spy* editor Dino Jonsater. "In the process, the director has a vision, I might have an idea, the producers have a vision, but ultimately it's how the film wants to be cut. And you have to find that out and be very sensitive [to it]."

HELLO I MUST BE GOING CAPTURED WITH ALEXA

Once they decided that shooting on film would be prohibitively expensive, director Todd Louiso and cinematographer Julie Kirkwood judged ARRI ALEXA to be the ideal tool to shoot the indie feature *Hello I Must Be Going*, which premiered at the 2012 Sundance Film Festival. The character-driven dramedy follows Amy Minsky (Melanie Lynskey), a recent divorcee in her 30s who reluctantly ends up moving back in with her parents.

For the project, Kirkwood outfitted his ALEXAs with Zeiss Ultra Prime lenses and captured to ProRes 444 on SxS cards. A prebuilt LUT was applied to dailies, allowing the filmmakers to view footage while on set that approximated the look of the film after color grading at Company 3.

"When people think of comedies, they tend to think of bright images with saturated colors. Our film has some of that, but I also had the freedom to go dark and desaturated when it fit the story."

Aquarium of the Pacific Launches Videoconferencing

Featuring galleries dedicated to animals and habitats found throughout the Pacific Ocean, the Aquarium of the Pacific in Long Beach, Calif., recently launched a marine biology videoconferencing pilot program. Anchored by a Broadcast Pix Slate integrated video production system, the studio has so far delivered more than 50 live presentations across the country.

There is no separate control room; one instructor operates the Slate and monitors the production through the built-in Fluent-View multi-viewer, while a second instructor conducts the class. The setup allows the instructors to switch between a webcam, document camera, video clips and still images to produce compelling HD videoconferences.

SIXTEEN19 MAKES THE CUT ON SPORTS SPECIAL

The original feature-length docudrama *A Game of Honor* from Showtime Sports and CBS Sports provides an extraordinary perspective on preparations for the Army-Navy football game, which takes place annually between U.S. Military Academy/West Point cadets and U.S. Naval Academy/Annapolis midshipmen. *A Game of Honor* aired just 11 days after the December 2011 matchup. (Navy won this year.)

"*A Game of Honor* was one of the most complex and demanding assignments of my career," Sixteen19 creative editor Anthony Cortese says. Shooting began in May 2011. "On most days we had two cameras shooting on location morning through night—on the field, in classrooms, dorms, gyms, all over both academies—but that ratcheted up to eight Canon EOS 5D and RED EPIC kits for the game. They accrued nearly 500 hours of footage, which I cut on a daily basis on Avid v5 as it arrived in our edit suite."

To keep track of the voluminous material, the Sixteen19 technical team worked with the project's field producers to develop an efficient dailies workflow. With more than 100 shoot days, distinct tape names and scene and serial numbers were critical for each clip. This system helped to transcend the timecode limitations of the 5D at the time, issues with sync sound and the fact that crews were often simply moving too quickly to slate.

Cortese concludes, "A tapeless workflow project of this scope requires an extraordinary support crew."

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An extended version of this story is available at www.dv.com/Mar2012

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WILLIAM REXER

Cinematographer

Newlyweds

Newlyweds, the latest film from writer/director/actor/New Yorker Ed Burns, was shot on a Canon EOS 5D that Burns bought at New York's B&H. Burns and his director of photography, William Rexer, have demonstrated with this project how inexpensively and stealthily a feature film can be made.

What did you find were the benefits of using the 5D?

William Rexer: It looks like a regular SLR camera, so we were able to go into a restaurant and shoot without anyone taking notice. [Working with minimal gear,] I could look for the shots in natural environments without worrying about dolly tracks or other equipment considerations that might be involved in a bigger production. Shooting with the Canon 5D, you are always awake and looking for the best natural choice.

What limitations did you experience?

We avoided high-contrast environments. Shooting in the winter in New York City, you've got sun blasting down the streets onto the white snow atop black asphalt. The format does not handle the high contrast, even though it might be a great shot. But all formats have weaknesses and strengths—you just make sure you play on the strengths, not the weaknesses.

How did the actors respond to the camera setup?

That was tons of fun. Actors truly forgot there was a camera in the room. We'd do two takes and they'd ask, "When are we going to roll?" We had been rolling the whole time!

—Joy Zaccaria

Amazing Race Traverses Globe with Anton/Bauer

Since their first day of production, the crew of *The Amazing Race* has used Anton/Bauer products to power them through even the toughest geographic and weather conditions. "*The Amazing Race* is essentially a constantly moving, live-to-tape game show with no rehearsals or retakes," says Jim Ursulak, audio supervisor for the show, "so we equip ourselves with the most reliable television production equipment available."

Church of Champions Opts for JVC Gear

The Church of Champions in Houston recently purchased four JVC GY-HM790U ProHD camcorders, along with a JVC KM-H3000U production switcher and JVC DT-V24G11Z 24-inch studio monitor. The new equipment is being used to webcast weekly sermons and other projects. The church produces live coverage of sermons on Sundays for its Web site, *www.champ.tv.*

Three of the four GY-HM790U cameras, positioned on the left, right and rear of the church, have full studio configurations, while the fourth camera is a handheld unit used on and around the altar.

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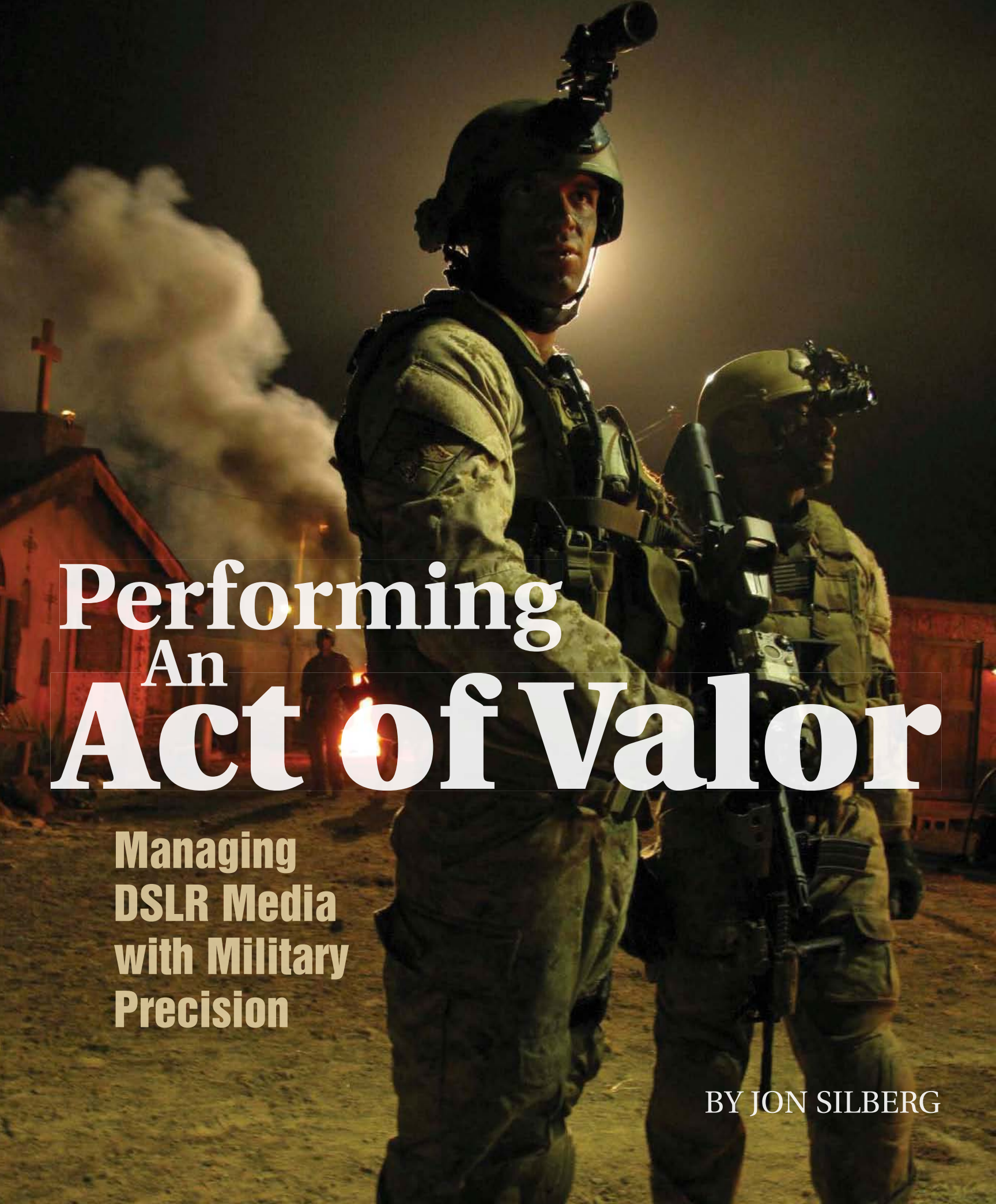

Performing An Act of Valor

Managing DSLR Media with Military Precision

BY JON SILBERG

The feature film *Act of Valor* follows an elite Navy SEAL team through a series of dangerous recovery missions. Like the SEALs—the United States Navy's principal special operations force—the production company behind the film takes pride in accomplishing the seemingly impossible...at least in terms of production and post.

Culver City-based Bandito Brothers, which calls itself a "full-service media company and filmmaking collective," evolved during the productions of the documentaries *Dust to Glory*, about off-road racing, and *Step into Liquid*, about surfing. For both films, directors Scott Waugh and Mike "Mouse" McCoy made use of camera gear and postproduction tools in ways that many thought was impossible.

They have repeated that feat on *Act of Valor*, their first narrative feature. Again, the team—along with Bandito Brothers chief technology officer Jacob Rosenberg—took developing technologies (particularly Canon EOS 1D and 5D cameras) in innovative directions to achieve their goals.

PHOTOS CREDIT IATM LLC

Above: The Bandito Brothers camera team preps to shoot.

Left: Lt. Rorke leaves for deployment.

GETTING STARTED

Bandito Brothers' Culver City operation had grown since those first, pioneering documentaries to include editorial and postproduction services, including in-house color grading via Blackmagic Design DaVinci Resolve for Mac, and visual effects capabilities with tools including Adobe After Effects and Autodesk Combustion.

Through Bandito Brothers, Waugh and McCoy were directing commercials for cars, soft drinks and various other products, often making use of the then-brand-new HD video capabilities found in the Canon EOS 5D Mark II and 1DS Mark III. They took advantage of the cameras' attractive combination of low price point and filmic image quality when using the cameras like "crash cams" on motorcycles or surf boards, and in covering action from far more angles than would be possible with more expensive camera equipment.

They were also doing work for several branches of the U.S. armed forces, which led to a request for proposal to make the film that would become *Act of Valor*—a proof of concept for Bandito Brothers beyond anything the founders could have hoped for. A feature film with access to an actual team of Navy SEALS and an arsenal of other military resources, it would re-create some real-life military scenarios, adding narrative elements to create a story. The film would have to be a high-power, entertaining action feature that would deliver a positive message about the SEALs. It would also have to come in at a relatively conservative price.

"When we started our company," Rosenberg recalls, "we had ambitions about doing something really big and making a statement with our work, and we were very fortunate to have this opportunity to push ourselves to be better in every aspect of what we do as a company."

Opposite page: SEAL chief Dave holds security after a direct action.

Around the time of the proposal, cinematographer Shane Hurlbut, ASC, met with Bandito Brothers about his assignment to shoot and direct some webisodes based around the movie *Terminator Salvation*. The cinematographer had worked primarily in celluloid and found the digital capture options of 2009 wanting, but he'd seen some of Bandito Brothers' work with the Canon cameras and decided to test them himself. He loved the big image sensor and the resulting depth of field. Despite the technical limitations of the 8-bit H.264 codec and some of the visual artifacting, such as the "rolling shutter effect" inherent in the CMOS sensor, Hurlbut reports being very excited about the cameras' positive attributes.

When Waugh and McCoy met with Hurlbut about him shooting *Act of Valor*, and doing a great deal of the work with Canon DSLRs, he was almost immediately sold. As he told *Digital Video* in an interview last year, "When the guys from Bandito Brothers came to me with the idea of shooting an action picture with a $2,500 camera, I was like, 'That's new. That's different. That's crazy. I'm in.' It's got to be in-your-face, immersive action like you've never seen before. The HDSLR cameras enabled us to do that." The goal was to put the audience "inside the eyes and mind of a Navy SEAL."

Navy SEALs engage in personnel recovery missions

IN THE FIELD

Approximately a quarter of the material in *Act of Valor* was shot on 35mm film using ARRI 235 and 435 cameras, and less than that with Sony HDC-F950 CineAlta cameras. The majority of the film, and virtually all of the super-fast, on-the-ground action scenes, was shot with multiple 5D and 1D cameras.

Though the filmmakers had tested the cameras for their image quality and durability, some issues still cropped up when they actually started shooting a feature of this scope with them.

Of course, in the three years since they first took the cameras out into the field to begin shooting *Act of Valor*, much has changed: the camera's firmware has gone through numerous iterations, postproduction tools have addressed many issues related to the highly compressed video recording codec, and independent filmmakers have worked out their own approaches to shooting with these popular cameras. But as early adopters, Bandito Brothers had a number of challenges to overcome.

First, the filmmakers tried to shoot with Canon lenses designed for still photographers, making use of the auto focus capability. The extremely short throw—relative to a cine-style lens—is famously frustrating to focus pullers who want a big throw and precise distance markings.

Panavision provided an adapter that allowed the team to mount Primo glass onto the cameras. "That was great," Rosenberg recalls. "The lenses were amazing. Unfortunately, Panavision doesn't make that adapter available anymore, but they were nice enough to allow us to use the adapters throughout production of *Act of Valor*."

Rosenberg also remembers that when they started shooting, the firmware didn't even exist to allow them to shoot at 24p. "We had frame rate issues like crazy!" he says. "A lot of the film was actually shot at 30 fps. We had to convert many scenes to 24p, although we left some of them at 30 deliberately to let them play a little bit in slow motion."

PREPPING FOR POST

Simple issues like file naming presented the filmmakers with a few challenges. "We shot to the CF cards," the CTO says. "We had a media manager on set who would collect the cameras and upload the files. But we'd have shooting days where different cameras would have the same file names and we couldn't do anything about it. It was a big awakening for us. You find a format that everyone falls in love with, but you see how disastrous it can be if you don't handle it correctly.

"We were shooting so much and covering everything with so many cameras that it would have been impossible to ever keep track of it all if we hadn't dealt with the naming issue immediately. Moving forward, when we would download data to our drives, we would go through an extensive renaming process—we developed a spreadsheet that would give us the name of the shot, day, camera, scene and take. We made sure the names were all eight characters so they would be EDL-compliant."

Rosenberg also developed a workflow for the files, making use of the Avid Media Composer 4 that the editors wanted to use for the creative

(continued on page 80)

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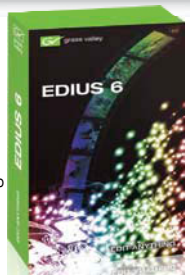

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JOHN MERLI

TRAVERSING THE *FROZEN PLANET*

BBC/Discovery Documentary Series Takes Production to Polar Extremes

What took 38 cameramen and 38 sled dogs, 12 reindeer, 33 snowmobiles, 28 helicopters, 22 boats, two ice-breaker vessels, 10 four-wheelers, Alec Baldwin's voice, 18 nations, and eight pairs of snow shoes over four years in temperatures often hovering around -40°F? The teeth-chattering answer is *Frozen Planet*, an epic seven-part Discovery Channel documentary series premiering in the United States on March 18 and running on subsequent Sundays.

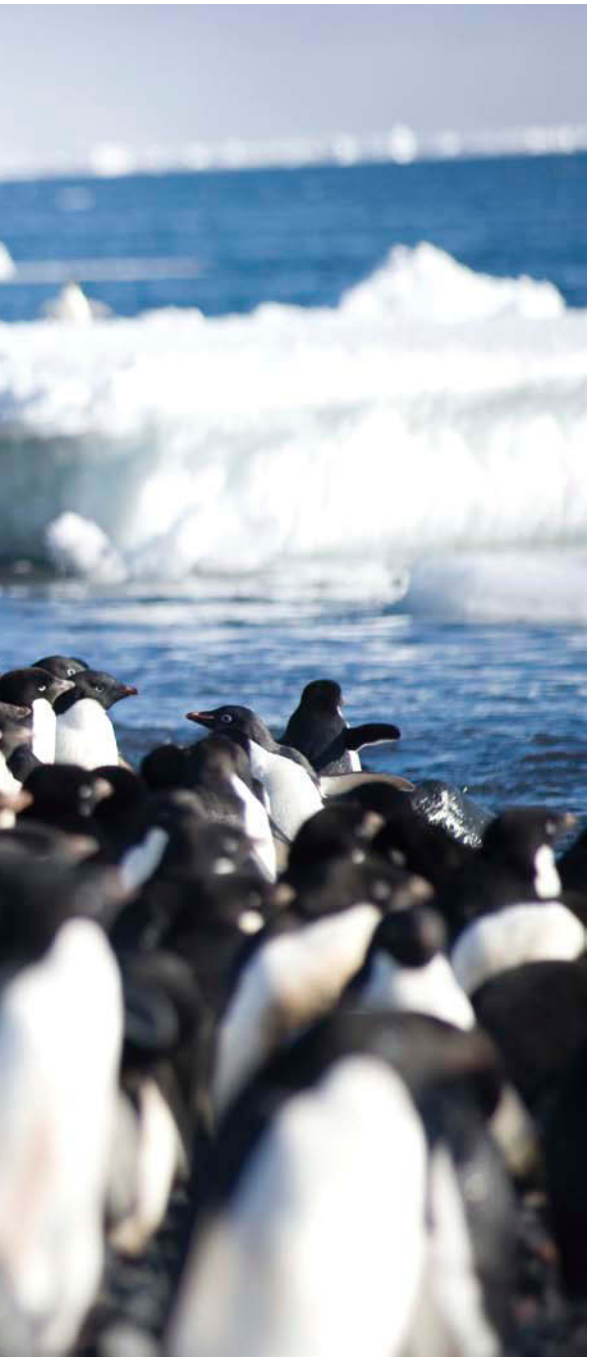
The BBC/Discovery co-production from largely the same crew who brought *Planet Earth* to the HD screen a few years ago explores the Earth's two polar regions. Shooting mostly on HD tape and some 35mm film in high-contrast environs, the *Frozen* crew deployed the same Cineflex gyro-stabilized aerial camera used so effectively in *Planet Earth*, with some notable adjustments.

"We of course had to completely winterize it for this shoot," says cinematographer Chadden Hunter, "but then we were able to put the Cineflex into service on platforms never used before–such as becoming a 'boat-gimbal' drifting amid those icy waters."

Hunter says that while just keeping the equipment running was challenging enough, a lot of otherwise routine shooting habits soon revealed their intolerance to hyper-frigid conditions. "Like pulling out a moist towelette for a lens wipe that you'd use on any other shoot, and in a split second it's covered with a sheet of chemical ice crystals. So you're busy scraping ice crystals off the lens and trying to use a dry cloth to clean it instead."

Hunter says crew members chose Panasonic VariCams for the bulk of shooting. "The VariCams were tried and tested, and they became our workhorses. But in such frigid conditions, the batteries constantly had to be changed, so we

Left: Episode 2, "Spring." Cameraman Mark Smith films Adelie penguins on the beach of the Cape Crozier colony, Antarctica. After 1,000 hours working alone among the penguins, Mark and producer Jeff Wilson began to lose their minds.
Right, top: Episode 3, "Summer." Mother polar bear and two cubs on pack ice, Svalbard, Norway. She is sizing up the camera crew as a potential meal while they were filming with their aerial camera mounted to a zodiac boat. The crew tried to maintain a distance of 15 meters at all times—but sometimes the polar bears didn't observe the rules!
Right, bottom: Cameraman Didier Noirot films emperor penguins underwater. They are returning to breed at Cape Washington, Antarctica. The team used a high-speed camera underwater to capture the penguins' magical underwater ballet.



stored them down our trousers and anywhere else on our bodies where we could keep the standby batteries warm.

"When we started shooting *Frozen Planet* a few years ago, we were probably the last of this generation to use HD tape, and by the end of our shoot, all the other productions around us had moved on to file-based shoots. It's true that the ability to review what you just shot in the field is really amazing, but when you're in the field for months at a time and so much is stored on such small [hard drive] devices, you really have to keep your wits about you for properly downloading when you're exhausted so you don't accidentally lose loads of expensive shoot footage. With tape, it's not really a problem," Hunter elaborates.

In order to keep the cameras themselves warm enough to fully operate, the crew bought small, battery-powered heaters from Wal-Mart. "They worked down to about -25°, but when we got down to -40°, we used an old hunter's trick: We actually used sticks of coal that we lit so they'd burn slowly in little metal cases. Then we wrapped these burning bits of coal in the cases in a blanket around the cameras. So we had these $50,000 HD cameras wrapped in bits of coal!"

"You've got to keep improving the image quality at all levels, and that's indeed difficult as you go through the whole production process over years."

—Vanessa Berlowitz, series producer, BBC

In all, the series filmed in every country within the Arctic and Antarctic circles during more than 2,300 crew days in the field, including six months solely on sea ice—and 134 hours *under* the sea ice. The production crew worked with more than half a dozen expert institutes—notably NASA (which asked to participate), British Antarctic Survey, United States Antarctic Program, PCSP Canada, University Centre of Svalbard Norway, University of Alaska Fairbanks, and Institut Polaire Francias.

Series producer Vanessa Berlowitz of the BBC says that since the series was shot and produced over four years, trying to keep evolving production values and image quality consistent from start to finish was a constant challenge. "You've got to keep improving the image quality at all levels, and that's indeed difficult as you go through the whole production process over years. We had to work against having any type of unevenness," Berlowitz says.

Part of her approach to the long shoot was working hands-on with equipment makers to improve or alter hardware to better function in

Chadden Hunter in Antarctica

An Adelie penguin male builds a stone nest in anticipation of the females' arrival. The males compete over the precious stones, often resorting to stealing to get the best ones. The crew spent four months filming every aspect of the Adelie's life cycle. This was one of the funniest moments of the shoot, as the main male continued to bring stones to his nest, oblivious of the thief who was taking them every time he turned his back.

Above: Gyro-stabilized camera fitted to a crane in a boat on the Bering Sea off the coast of Chukotka in the Russian Far East. This system enabled the team to film steady shots of a team of walrus hunters. Left: Episode 2, "Spring." Pod of orcas surfacing among the breaking sea ice, Ross Sea, Antarctica, 2009. The team filmed them simultaneously from the air, ice, and from underwater with a camera attached to a Polecam. The crew was dropped into position by helicopter in order to film these unique shots.

the particularly harsh weather conditions. "We went to Panasonic several times and said, 'We need you to improve the light sensitivity and imaging quality for the penguin sequences,' or for some underwater shooting or other difficult shots. We worked personally with the Cineflex people to winterize their [gimbal] camera."

With 24 hours of sunlight per day, summer shoots required endurance. To capture footage of polar bears, for example, the crew shot over three continuous days in five-hour shifts, Berlowitz says.

"Sometimes we wound up using 35mm cameras for high-speed capture on the ice edge, literally dropping crew onto the sea ice [from helicopters]. We needed a really rugged, highly portable camera to cope with the extreme light and contrast of the ice and sun.

"We also used 35mm cameras on motion control heads [to capture] continuingly moving time-lapse shots, like we had done in *Planet Earth*. The emperor penguin sequence was shot in 35mm—although 90 percent of the series was not," Berlowitz notes. "The nice thing about a 35mm film camera is you can still open it up and fix it!"

Despite some sequences that look almost from another planet, Berlowitz explains that the production team has an "absolute mantra" that no images can be artificially enhanced in any way with today's easily available software tools. "Nothing is ever faked; nothing artificial is ever added in postproduction, for example. This is imperative for us. We don't recompose shots or add any layers of CGI," she says.

While most of the series is narrated by Alec Baldwin, the seventh and final episode, which examines rising temperatures and their effect on the North and South poles, is hosted on camera by renowned British naturalist David Attenborough. **dv**

JENNIFER WOLFE

INSIDE THE SECRET STASH

Comic Book Men Captures Kevin Smith's Unconventional Universe

PHOTO BY DANE POTTER/AMC

Walt and Mike with Chucky in the Secret Stash

Comic book fans have been flocking to AMC in February to watch the cable channel's new unscripted series, *Comic Book Men*, which dives deep into fan boy culture, following the antics in and around filmmaker Kevin Smith's iconic New Jersey comic shop, Jay and Silent Bob's Secret Stash.

Known primarily for his role as Silent Bob, Smith has written, directed, produced and acted in films including *Clerks*, *Mallrats*, *Chasing Amy*, *Dogma*, *Jay and Silent Bob Strike Back* and *Clerks II*. For AMC's *Comic Book Men*, Smith keeps a watchful eye over Secret Stash, where staff and customers alike geek out over mind-blowing pop culture artifacts and the legends behind them.

Leading the crew behind the counter is

moody manager Walt, followed by über-nerd and comic book virtuoso Mike, the shop's technical expert (and go-to whipping boy) Ming, and career slacker Brian, who doesn't actually work at the Stash but can always be found perched on a stool behind the front counter. As the team buys, sells and discovers the treasures of the comic collecting world, they share all the juicy details with Kevin through their outrageous podcast, which is woven throughout the series.

Director of photography Jeremy Schneider sought to create a distinctive look for the six one-hour episodes of the series, employing saturated hues reminiscent of comic books and designing a lighting scheme for the store that would allow the crew to shoot in a 360-degree panorama.

"This is AMC's first foray into reality," Schneider explains. "They are known for their stellar original programming on the narrative side, so we felt a responsibility to give them something new and unique in reality programming. The podcast concept allowed us to go beyond traditional formats and bring a little bit of a new flavor to reality."

The "Dear Comic Book Men" podcast is available after each week's episode of *Comic Book Men* on AMCtv.com and iTunes.

Shot with the Panasonic AJ-HDX900, principal photography for the series was completed in six weeks. "The time frame was a little challenging, but it's nothing we haven't done before," comments Schneider. "AMC wanted to stick with the one-hour format, which presented its own challenges. There's a lot of time to fill in an hour."

Schneider used a single-camera setup

Walt and Brian doing the podcast

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augmented with HD GoPro cameras for scenes shot inside the Secret Stash, but he employed a four-camera setup for the podcast sequences in order to deliver extra production value. "Kevin Smith has built this podcasting empire, which gave us the perfect way to get around the traditional on-the-fly formal interview format usually employed in reality TV," he says. "We needed to do something that was a little different, a little outside of the box in terms of interviews as well as narrative exposition, so we set this in the world of podcast. Podcasting is Kevin Smith's world, so that's what Kevin's employees use in order to communicate with him."

The set for the podcasts was designed in grey and white to evoke the idea of a comic book panel and set up with vintage microphones. "It was very graphic," Schneider says. "The guys, who are pretty colorful characters in their own right, would wear bright, vibrant colors and sit around old-style microphones in this retro black-and-white radio station, hashing out the highlights from the week intercut with footage from the shop. It was a great way to get the exposition to Kevin without feeling stifled."

Conditions for shooting inside the Secret Stash were less than ideal for Schneider and his crew. "The shop was a very dark, under-lit place, and since 80 percent of the show takes place inside the store, we had to come up with something that would allow us to have more light but still look organic," Schneider details. "We also needed to shoot 360, which meant that all the lights had to be hung from light boxes. We ended up using a mixture of lighting: 575-watt HMI lamps to move daylight through the windows, along with a bunch of array heads—going from 150 watts on up to 650 watts—to bring up the ambient level."

The colorful, highly saturated look of the store as it is shot for the series contrasts with the podcast footage, which has a stark, vintage black-and-white feel. "I wanted to build the primary colors in the store," Schneider says. "The store is already red and blue, so I put red and blue accent lights throughout it to make it look like a living, breathing comic book—juxtaposed with the podcasts, which were more of the opposite comic book style. The goal was to bring a strong visual style and make it stand out, and we're hoping we've accomplished that." **dv**

Smith and producer partner Scott Mosier are behind the extensive SModcast Podcast network, which is broadcast on SModcast Internet Radio, or S.I.R.

PHOTO BY DANE POTTER/AMC

(L-R) Walt, Brian (obscured), Ming and Mike

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Left: Secret Stash manager Walt | Right: Brian

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DP LUKAS STREBEL IS IN THE MONEY

Luck Takes On the World of Horse Racing with Mixed Formats and Footage

HBO's *Luck* is a television series with a thoroughbred pedigree. Creator David Milch's writing credits include innovative television like *Hill Street Blues* and *NYPD Blue*, and he created the HBO critical hits *Deadwood* and *John from Cincinnati*. Co-executive producer Michael Mann was the driving force behind *Miami Vice* before he moved into feature films, directing *The Insider*, *Heat* and *Public Enemies*.

Luck also boasts a top-flight cast led by Dustin Hoffman in his first recurring television role. Hoffman portrays Chester "Ace" Bernstein, a man who, in the first episode, emerges from four years in prison bent on revenge.

The drama plays out in the world of horse racing, which offers characters who run the gamut from royal to seedy, a picturesque setting, and every vice known to humankind in plentiful amounts. And many cinematographers say a horse race, with its characteristic speed, power and beauty, is as photogenic an event as there is in the world of sports.

Stuart Dryburgh, ASC, NZCS, served as director of photography on the pilot and several early episodes. Taking over for episodes four, six, seven and nine was Lukas Strebel, a Swiss-born cinematographer who makes his home in London. Strebel, an Emmy winner in 2009 for *Little Dorrit*, says that he got the call after Mann's wife saw an installment of *Wallander* on television.

PHOTOS BY GUSMANO CESARETTI

At left, the gamblers: (L-R) Ian Hart (Lonnie), Ritchie Coster (Renzo), Kevin Dunn (Marcus) and Jason Gedrick (Jerry)

Strebel dreamed of being a film director from a young age. He served a four-year apprenticeship at Zurich Fashion and Commercial Photographic Studio, and taught photography from 1973-75 at the Bath Academy of Art. He spent two years in the U.S. before returning to his native Switzerland, where he started in the film industry as a still photographer. He then spent 20 years working throughout Europe as a director and cinematographer. In addition to *Wallander*, his recent credits include the television productions *Mistresses*, *The Whistleblowers* and *Garrow's Law*, and commercials for top clients including Toyota, Ericsson and the World Wildlife Fund.

"Coming onto *Luck* was like jumping onto a moving freight train, since they were already three episodes in," says Strebel. "But I was thrilled and honored."

Luck was produced on a combination of actual Southern California locations and sets built in Culver City. The main setting is Santa Anita Park, the Arcadia, Calif., art deco racing jewel that opened in 1934. The track's history

(L-R) Michael Mann, Nick Nolte

as a shooting location goes back to 1937 and the Marx Brothers' *A Day at the Races*.

Santa Anita provides the filmmakers with a wide range of settings, including the stables, saddling and jockey rooms, grandstand, ticket windows and the track itself. Strebel says that roughly two-thirds of the show is filmed there.

"The Southern California light is amazing, sometimes with wonderfully bleached skies, and in the late afternoon it becomes so warm and colorful," he says. "The downside of shooting at the track is often a lack of control. Even when we're shooting in the grandstand, there are strict limitations on the use and movement of lights and reflectors because the real-life thoroughbreds training on the track are so incredibly sensitive. We have to be extremely quiet."

Strebel says that by the time he joined the show, methods had already been developed for filming the horse race that every episode includes. "Michael's family of operators and grips had developed a low-tech pole-camera system to film the action," he says. "Michael didn't want to shoot in a conventional style, with Russian arms and the like."

The pole-cam rigs, which are outfitted with Canon DSLR cameras, are sometimes augmented by 35mm film cameras capturing images at high frame rates. Sometimes speed ramps are added in post to highlight an emotional moment. "Often we need specific story beats, like when one jockey is interacting with another during the race," says Strebel. "It's challenging, and we get some amazing footage."

Generally, however, Strebel finds himself drawn to the dramatic situations. "I'm not a very technical or action-oriented cinematographer," he says. "I love getting two actors in a room or a landscape and having the opportunity to create a mood in which they interact. That's what gives me a kick. The action in *Luck* is wonderful, but I love chamber pieces. Michael Mann really wants to shoot at real places, and that's great. When I came on, he told me that I'd be photographing a lot of amazing L.A. settings."

One such location was a 1950s dive motel called The Oasis. Strebel says it featured a swimming pool with two feet of murky green water and a revolving cast of questionable characters not on the call sheet. In the story, four lowlife characters—played by actors—share a single motel room.

Strebel often covered their conversations with three cameras, making for cramped quarters.

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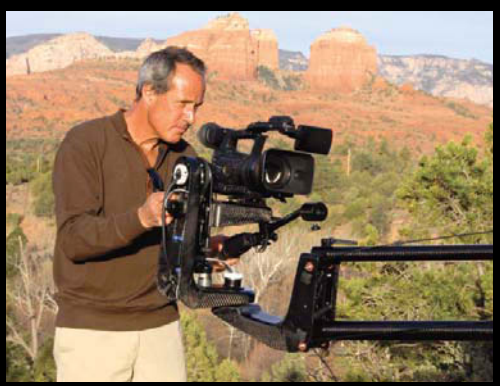

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"It was a very difficult lighting situation, because outside the window we had the L.A. sun, the harshest light," he says. "We would fly a 20-by-20 flag at times, but we didn't always have time for that. Inside, we were usually handheld, to help communicate the nervousness of these characters."

The production's ARRI ALEXA cameras were usually equipped with Cooke S4 prime lenses. In tight situations like the motel room, however, they were more likely mounted with Angenieux zooms.

"The flexibility and range of these cameras is extraordinary," Strebel says. "Four years ago, this type of high-contrast situation would have been very difficult for an HD camera, but now the results are quite amazing. The ALEXA is a very mature camera, developed with the wishes of cinematographers and their crews in mind. Still, I was always smiling when we got into a proper interior."

Nick Nolte as trainer-turned-owner Walter Smith

Strebel had more control on the sets that depict Ace Bernstein's Beverly Hilton penthouse suite. A huge Translite surrounded the set and could be adapted for day or nighttime scenes in a matter of minutes. Here, movement was smoother and the camera more observational.

"I was amazed at the amount of equipment and crew we had available," says Strebel. "Compared to shooting in Europe, it's incredible. We had three dolly grips and three dollies. Track was laid out within minutes. That allowed us to make decisions on the fly, as we went along. On a normal production at home, I'd need to know way ahead of time if I needed dolly track. On *Luck*, coverage was incredibly rich, and we left a lot to play with in the edit."

Back on the streets, ALEXA gave Strebel the flexibility to shoot night exteriors and night car interiors with very little augmentation of existing light. "For one scene in Chinatown, we actually switched off the streetlight," he says. "Some closer streetlights we gelled with ND or covered with diffusion. We used a tiny LED light inside the car, but the rest was existing light, the beautiful mess of color you see in Chinatown. In one shot, an extraordinary colored light was emanating from a nearby shop window and playing on the actors' faces. I love being inspired by real lighting situations, and very often I like to work around those and carry them further. Having a camera with the sensitivity to pick that up is great. I was just hoping that the shop didn't turn off the light before we got our shots."

Dustin Hoffman (at right) as Chester "Ace" Bernstein, and Dennis Farina as Gus Demitriou, his right-hand man

Another tool that Mann has used over the years is the P+S Technik SKATER Scope, a snorkel lens system that can periscope around corners. Strebel says it's a technical innovation that helps filmmakers elicit an emotional response in the audience.

"I like this rig because it allows me to use our normal lenses," says Strebel. "The prism inside bends the perspective as you get closer. It's very strange, and Michael used a similar rig on previous projects, like *The Insider*, for instance. It's very effective for changing the geography as you creep into or around a character."

The *Luck* pilot appeared on HBO in December of 2011. In late January the network announced that a second season was in the works. Strebel says that he is in talks to shoot more episodes. "It was an incredible six months," he says of his experience on the first season. "It's great to be asked back." **dv**

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DISCOVERING *THE OTHER F WORD*

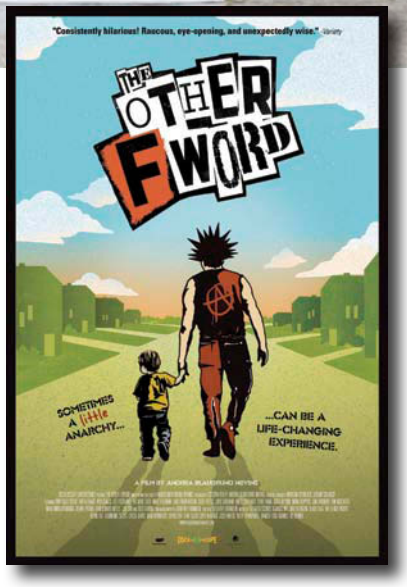
DIY Spirit Drives Production on the Punk Rock Documentary

PHOTOS COURTESY OF OSCILLOSCOPE LABORATORIES

Lars Frederiksen (Rancid) and son

What happens when a generation's ultimate anti-authoritarians become society's ultimate authority figures? With a large chorus of punk rock's leading men-turned-fathers—including Blink-182's Mark Hoppus, Devo's Mark Mothersbaugh, Rise Against's Tim McIlrath, and Greg Hetson of the Circle Jerks, Redd Kross and Bad Religion—*The Other F Word* follows Jim Lindberg, a 20-year veteran of the skate punk band Pennywise, on his hysterical and moving journey from belting out his band's anthem, "F**k Authority," to embracing his mid-life role as a father.

Each of the musicians interviewed for the documentary offers a unique take on the events that took him away from outright rebellion and into more settled terrain: Black Flag front man Ron Reyes condemns the brutish attitude of the scene, while both Everclear's Art Alexakis and the Red Hot Chili Peppers bassist Flea consider the impact of their neglectful fathers on their own family commitments.


"Consistently hilarious! Raucous, eye-opening, and unexpectedly wise." Variety
THE OTHER F WORD
SOMETIMES A little ANARCHY...
...CAN BE A LIFE-CHANGING EXPERIENCE.

The Other F Word premiered at Sundance in March 2011 and is screening at festivals and theaters around the country prior to its DVD release at the end of the month. The filmmakers collected more than 200 hours of interviews and archival footage over the course of the project, which took nearly three years to complete.

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Geoffrey Franklin, who also served as editor for the project, used Canon's XH A1, a low-level two-watt lighting kit and a Sennheiser wireless microphone system to capture interviews and behind-the-scenes footage.

"Our production team was *very* lean," comments director Andrea Blaugrund Nevins. "We felt that shooting these people in their own environments, where they would be comfortable, was crucial, and we wanted to do it in a way that was true to the punk spirit and DIY mindset they embrace."

We tried to make the production as low-impact as possible on the people we were interviewing," Franklin adds. "Some of our subjects were more timid than others, so it was important to tread lightly with them and not overcrowd their space."

Inspired by Lindberg's book *Punk Rock Dad: No Rules, Just Real Life, The Other F Word* was originally conceived as the story of the ex-Pennywise front man's journey to fatherhood and the compromises he makes along the way, but when Lindberg realized how much access to his private life Nevins and Franklin would need for the film, he balked, and the filmmaking team had to scramble to enlist additional punk rock dads into the project. "Every single project you work on comes with its own set of parameters," Nevins says. "Jimmy couldn't give us access to everything we wanted, so we ended up having to interview a whole bunch of fathers in order to get the story arc we needed."

"I really learned to trust Andrea during this process because she has vastly more experience with this type of storytelling," Franklin comments. "It was an enormous learning curve. I had to learn to listen, react and change the story as we learned more things."

Nevins' background includes work as a journalist, with stints at NPR's *All Things Considered*, the *New York Times* and ABC News, in addition to her documentary filmmaking pedigree. In 1997, she produced the Academy Award-nominated documentary short "Still Kicking." *The Other F Word* marks her feature-length directorial debut.

With more than 200 hours of footage to work with, the *Other F Word* filmmaking team spent nearly three months screening the material and creating a script for editing in Apple Final Cut Pro. "That was definitely the scary part," says Franklin, who was editing his first feature-length project. "There was so much great footage that it made it difficult to make editorial choices. I learned to default to the story."

"We found that working with a script was very helpful to the project," Nevins continues. "We transcribed every single interview and pieced together a story from the transcript book as we screened the footage. There were so many stories to interweave and we needed to make sure that the audience got to know each character and that their stories were being told as well as possible."

Above: Fat Mike (NOFX) and daughter | Below: Mark Hoppus (Blink-182) and son

Archival footage shot in mostly SD formats presented another problem, which the filmmakers solved with the use of a Teranex converter. To achieve a consistent look among the various formats, the documentary was finished at LaserPacific by colorist Gareth Cook.

"The majority of our budget went for postproduction and music rights," Nevins says. "When we finished shooting, we felt like we had done this on a really amazing budget, which fit the spirit of the project. It's fantastic that, given today's equipment, you really can tell an entertaining story without breaking the bank." **dv**

EDIT

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RED AND UNDEAD

Company 3 Completes 3D and Color for *Underworld Awakening*

Company 3 used Blackmagic DaVinci Resolve with Resolve Control Surface for color grading the 2D, 3D and IMAX 3D versions of *Underworld Awakening*. Directed by Mans Mårlind and Bjorn Stein and shot by Scott Kevan, *Underworld Awakening* is the latest in the popular and visually arresting vampire-themed *Underworld* series.

Senior colorist Siggy Ferstl at Company 3's Santa Monica facility worked with the filmmakers to help bring a "refreshed" look to the series. While the previous films were defined by a cold, steely blue look, the world of *Awakening* is somewhat different. "The creative team was intent on building a bold new look for the franchise, especially since this is the first 3D installment," explains Ferstl. "Of course, being part of the *Underworld* series, a lot of the story takes place in darkness with characters who are often dressed in very dark costumes. We used color a lot to help the viewer differentiate between people, vampires and lycans, often during intense, fast-paced action scenes."

Kate Beckinsale stars in the Screen Gems action-horror *Underworld Awakening*.

Shot by Kevan with RED EPIC cameras, the original material, Ferstl recalls, "had very rich, deep blacks. The wealth of information in the shadows gave me a tremendous amount to work with during color grading. It was great to have so much to work with in the darker areas of the frame and to have such control in Resolve to finesse things."

Directors Bjorn Stein (left) and Mans Mårlind on the set

"This is especially important for a stereoscopic film," he adds. "Today's 3D projection technology can't display whites as brightly as we're used to in 2D, so if we want to see a lot of contrast on the screen, it has to come from the darker areas."

Ferstl explains how he made extensive use of Resolve's parallel node function to help fine-tune the film's look: "If you give the scene an overall cold, blue look, of course you lose a lot of your warmer tones," he notes. "The richness of red—say, in blood—will be lost. But by using parallel nodes, I can very efficiently give a scene that colder feel in one node and then bring back certain information from an earlier node. This way, the shot can have a kind of blue feel overall, but the blood can still retain that powerful red color it had before I added the blue wash."

Resolve's stereoscopic 3D hardware capabilities also played a significant role in the grading process. "Any movie shot in 3D can have some alignment issues between the left and right eyes that impair the 3D illusion," Ferstl explains. "In the past, these would have had to be fixed at a visual effects facility. But I was able to use the Resolve's auto-alignment function for virtually every shot that needed adjustment. It worked very well and added a great deal of efficiency to the DI process." **dv**

JOY ZACCARIA

ISTOCKVIDEO.COM

Video Content For and From the Creative Community

iStockvideo.com, part of iStockphoto.com and based in Calgary, Canada, has taken note of trends in video selection for its customers—most alluring is content that mirrors the look we've become accustomed to in mainstream media. From reality TV to videos shot on smart phones and posted to the web, the look has favored what is captured instantly and supposedly without rehearsal.

While the tone is unpolished, however, the technology used to capture it still needs to be cutting edge.

iStockvideo.com maximizes its community of contributors. "Often they are editors and producers themselves who are working with media all the time. They are cognizant of what works and what is in demand," says Jim Goertz, director of video content development at iStockphoto.com. "So they'll shoot and upload what they think might be useful for an editor. These days, it is material with a more gritty and authentic look."

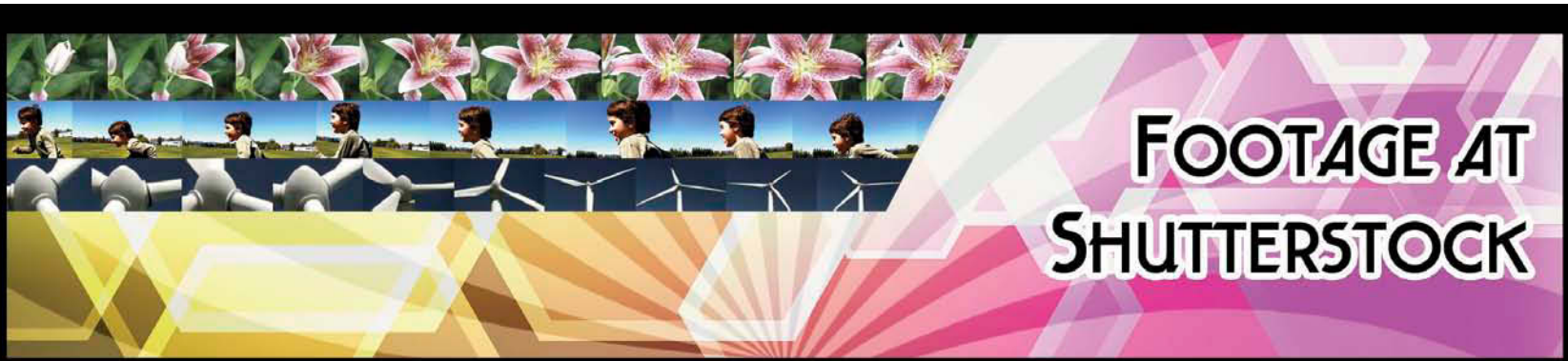
Throttle Post & FX in the Dallas/Ft. Worth area is a full-service postproduction facility working on a range of film, television and web videos—from corporate, industrial and political to full-length feature films and documentaries. Many of Throttle's searches on iStockvideo consist of shots of landmarks in the cities in which their clients are based.

Throttle picks the highest-quality stock to try to match its own material and keep projects lossless. "Many videos I find on iStock were shot using cameras that we frequently use, such as the Canon 5D and 7D, as well as RED cameras and P2," says Throttle post supervisor Katherine Walker. "So the quality really holds up to what we would want to include in a television or web commercial."

iStockphoto.com is 12 years old. About five years ago they expanded into video based on customer demand; iStockvideo began with about 1,600 video files and now has more than 400,000.

The material on iStockvideo is uploaded by individuals all over the world—all on spec. Buyers look through the portfolios and select those whose look is compatible with their style. If an agency likes the look of an artist's work but needs some specific content that is not in stock, they will contact the artist directly through the website for custom work.

"Our artists are free to enter into contracts on their own, outside of the site," says Goertz. "Customers can trust us and our artists for their technical excellence and material that reflects our mainstream media. I'm very proud of that part." **dv**



OLIVER PETERS

FINAL CUT PRO X REDUX

What Editors Can Accomplish with Apple's Updated Software

Apple launched into February with an eagerly awaited free update to Final Cut Pro X. Apple uses the Mac OS X numbering scheme, so the official update is 10.0.3, which would be equivalent to a version 1.3 release in other products. Don't let the numbers fool you, though, as this is a huge release that adds major features, as well as some enhancements. The FCP X update was accompanied by corresponding free updates to Compressor 4 and Motion 5.

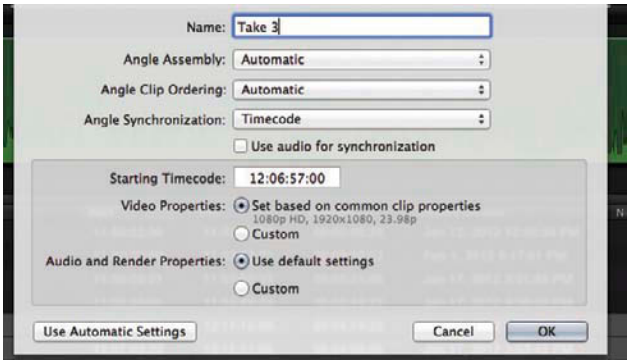
The most prominent new feature in FCP X 10.0.3 is multicam editing.

MULTICAM EDITING

The addition of multicam editing and broadcast monitoring fulfills an earlier promise to restore a number of features in FCP needed by professional users. The FCP X multicam editor is fully featured and an improvement over FCP 7. You can cut with up to 64 camera angles of mixed formats and frame rates. Simply select the desired sources in the event and combine them into a multicam clip. When you do this, a dialog box opens to select a synchronization method. The options include timecode and markers, but also a sophisticated method to sync by audio waveforms, like that used by Singular Software's PluralEyes. You can open this multicam clip in its own timeline and make adjustments to the order of cameras, add effects and add more cameras.

Simply edit the multicam clip to your project (edited sequence) and pick the angle to use for audio and video. To cut between camera angles, Apple has added the Angle Viewer, which displays a matrix of camera angles ganged in sync with the project timeline and viewer. The Angle Viewer can display up to 16 angles per bank. If you have more than 16 cameras, then switch the Angle Viewer between banks as needed. Angles are mapped by default to the number row on the keyboard, so cutting cameras is as easy as playing and switching "live" between angles by hitting the appropriate number key.

I tested this with two cameras and a four-channel audio file with matching timecode. The audio file consisted of four ISO mics. Cutting camera images was easy and fun, but not the audio. FCP X has a very convoluted method of working with multichannel audio from a single source thanks to the trackless timeline. The usual menu options to "detach the audio" or "break apart items" appear to be disabled for multicam editing; therefore, it's impossible to edit or mix the four individual mics within the project timeline. (It could be done by separately editing the audio to the timeline again or doing that work in the original multicam source clip.) Multicam is nicely implemented for picture, but until the audio side is fixed, it's unusable for some projects, such as reality TV shows.



Left: Once files have been combined into a multicam clip, you have a choice of various synchronization methods.

Below: The new multicam editing mode adds an Angle Viewer window to the interface, which can be opened to facilitate camera cutting.

BROADCAST MONITORING

FCP X 10.0.3 adds the ability to properly monitor audio/video signals through a range of PCIe cards and Thunderbolt units from vendors like AJA, Blackmagic Design and Matrox. In use, it's obvious why Apple considers this feature as still in beta development. I tested it with a Blackmagic DeckLink HD Extreme 3D card and new beta drivers from Blackmagic Design. The video quality was accurate, but the card tended to momentarily drop to black as I moved between sources and timeline playback within FCP X. In fact, it was hard to keep the signal up on the external monitor when I wasn't playing the timeline. When I did get it to stay, however, it tracked the images during skimming without issue.

There are no controls to change viewing format as in FCP 7. You have to set the card's default format using the System Preferences pane to match the project you are working on. This requires

that you quit FCP X and relaunch every time you make a change. There is no pull-down insertion, so if you are working on a 23.98 fps project, you will need a broadcast monitor that supports 24 fps viewing. I found that the playback intermittently dropped frames, which was most obvious on pans and tilts. Colleagues testing AJA KONA cards reported similar issues.

OTHER MARQUEE FEATURES

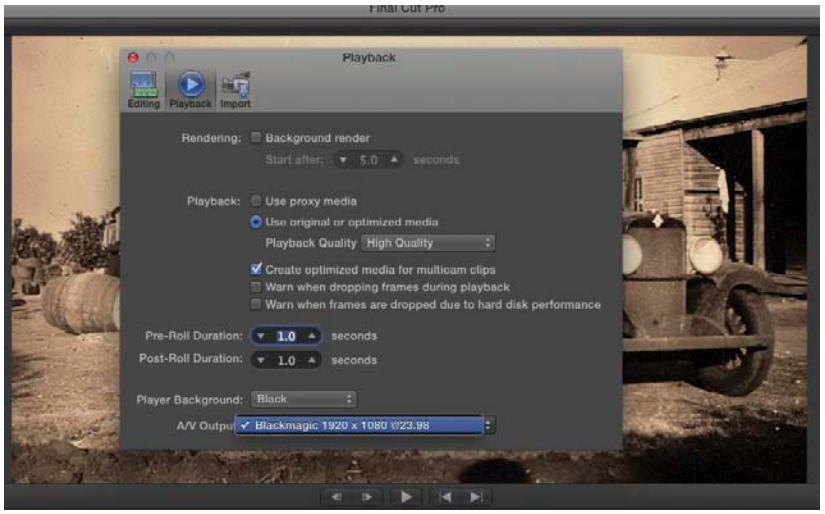
Motion 5 introduced a very powerful green/bluescreen keyer with both "one-step" and advanced controls. The simple version of that keyer was found in FCP X, but with this update, the full range of advanced controls has been exposed inside the FCP X interface, and new features like light wrap have been added. This improvement gives FCP X one of the nicest keyers in any NLE—certainly on par with Avid's SpectraMatte or Adobe's Ultra.

The best new feature for me is Relink, which enables viable offline-to-online workflows within FCP X. Simply highlight the clips in a project and relink the media. FCP X will also import the new clips into an event. For example, in an ALEXA or RED project, you may opt to cut with low-resolution dailies generated by the lab or the DIT on set. When the cut is locked, create a new event, duplicate the project and associate it with that new event. Now relink to the original high-resolution camera files (or ProRes conversions in the case of RED) and your project will show up with the corresponding clips ready for color grading and finishing.

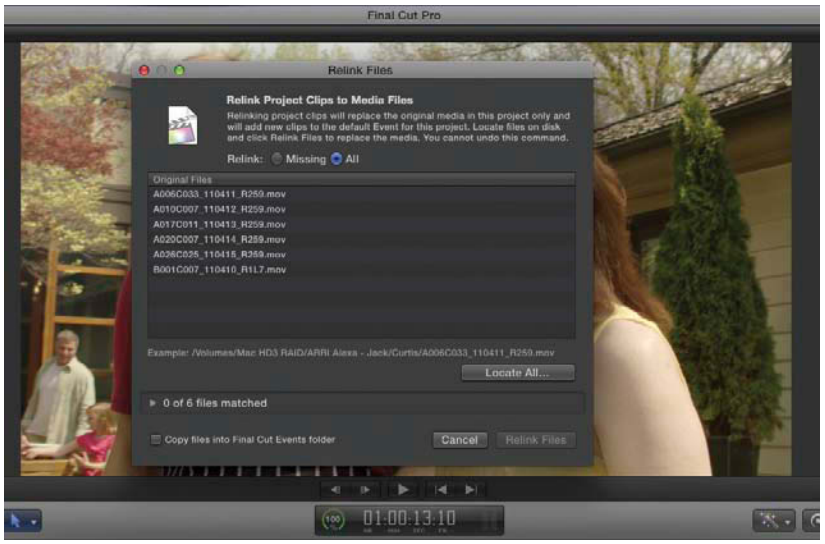
A number of other changes have been made throughout, including a change to the way Photoshop files are imported. In the first version, files were imported and flattened. Now, layered Photoshop files are imported as a compound clip with layers intact, allowing you to adjust the elements within the FCP X timeline. Any Photoshop layer effects, like drop shadows or embossing, have to be merged first in Photoshop to show up correctly in FCP X.

EXPANDING THE ECOSYSTEM

The number of vendors and the depth of their offerings for Final Cut Pro X have been quickly rebuilding, adding effects and filters, but also filling in workflow gaps. The biggest news with this update is the release by Intelligent Assistance of the 7toX application (available at the Mac App Store for $9.99). You can finally migrate Final Cut Pro 7 projects and/or sequences into Final Cut Pro X. Check the site for the list of what works and doesn't, but in its first iteration, a rich amount of data is brought over from FCP 7 to FCP X. The big caveat is that you must have media connected to the FCP 7 project when you export the XML in order for the translation and linking to work properly. Paired with the companion app, Xto7 for Final Cut Pro, 7toX will let you "move off of the island."



FCP X 10.0.3 has added broadcast output through leading PCIe cards and Thunderbolt devices from AJA, Blackmagic Design, Matrox and others. Though available, this feature is still in beta development.


Final Cut Pro
Relink Files
Relink Project Clips to Media Files
Relinking project clips will replace the original media in this project only and will add new clips to the default Event for this project. Locate files on disk and click Relink Files to replace the media. You cannot undo this command.
Relink:
Missing
All
Original Files
A006C033_110411_R259.mov
A010C007_110412_R259.mov
A017C011_110413_R259.mov
A020C007_110414_R259.mov
A026C025_110415_R359.mov
B001C007_110410_R1L7.mov
Locate All...
0 of 6 files matched
Copy files into Final Cut Events folder
Cancel
Relink Files
01:00:13:10

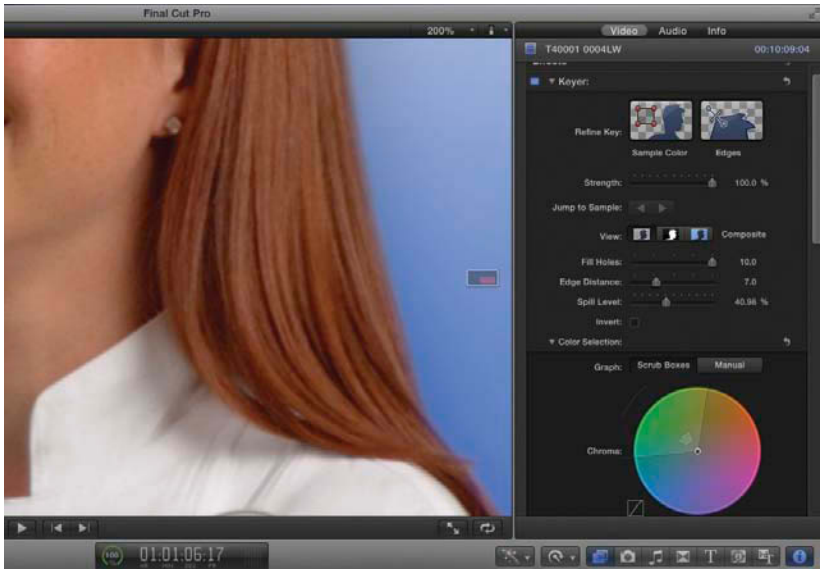
Editors will welcome the Relink Media function, which will make offline-to-online workflows much easier in FCP X.

Most of the FxPlug plug-in vendors have been getting up to speed with new tools for FCP X. These now include popular packages from Noise Industries (FxFactory), CHV, Crumblepop and CoreMelt. Recent additions to the party have included Pomfort, Digieffects, Digital Heaven, Nattress, Red Giant and GenArts.

Digieffects' Damage and Delirium filters have been popular with effects artists and provide the FCP X editor with a nice complement of distress/distortion effects and particles, including electrical arcs and fairy dust. Digital Heaven has focused solely on Final Cut instead of a wider range of hosts. Their small and affordable set of transitions and filters is often the right

tool for the job. Now for FCP X, Digital Heaven offers a set of transitions (flares, bumps, rolls, light flashes, shutter, stretch-pans), the Reincarnation (pixel fixing) and Box (transform and crop controls) filters, plus an overlay grid.

Just before the release of FCP X, Noise Industries launched FxFactory 3, which included a number of new products from partners Nattress, Yanobox, Luca Visual FX and Idustrial Revolution. Graeme Nattress was an early FCP effects developer, but most now know him as the man behind RED's codec and color science. FxFactory 3 offers updated versions of his levels and curves filters to augment FCP X's color grading capabilities. Along the same lines, Yanobox added Moods, a color wheel-based grading tool for those who don't like the FCP X Color Board. Both Nattress and Yanobox have been able to work around the limitation of the slider-based FCP X filter panel by using on-screen controls that lay over the image in the viewer.



FCP X's chromakeyer gains advanced features with the 10.0.3 update, including light wrap.

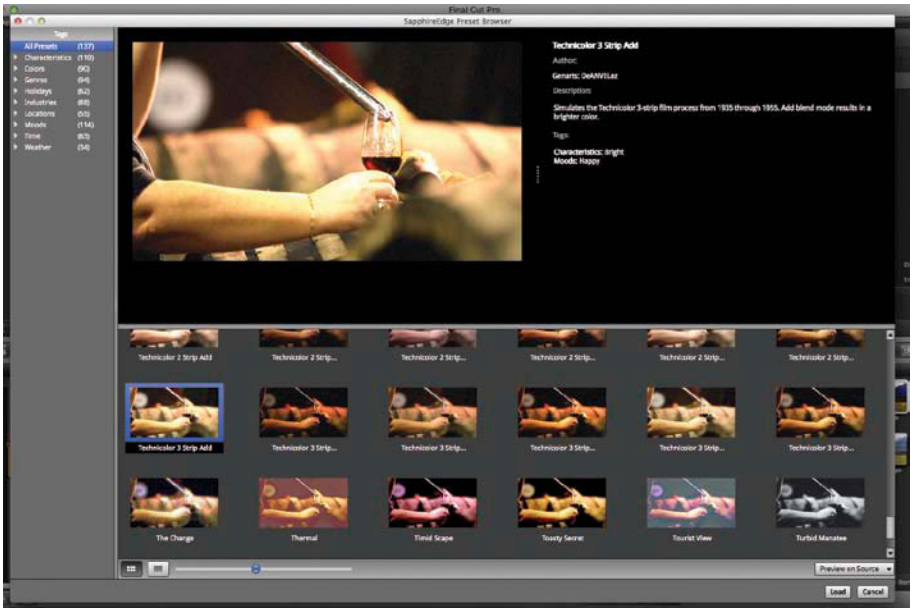
Idustrial Revolution and Luca have brought a number of new effects to FCP X and Motion 5 with XEffects Tech Transitions and the Grunge Collection, respectively. XEffects includes a variety of transitions using grids, panels, zooms and wipes to divide up outgoing and incoming shots at the transition. This results in effects with a realistic, action-adventure feel. Luca's Grunge Collection includes Grunge Effects, Film Leaders, Sprocket Slip and Light Leaks. These show up inside FCP X as filters, generators and transitions, depending on the type of effect. There are a lot of different light leak and grunge packages on the market, but this collection provides a great toolkit to editors in a single package.

Pomfort has been a software developer focused on ARRI ALEXA products. For FCP X and Motion 5, the company offers a set of LUT (lookup table) filters to convert "flat" camera profiles into Rec. 709 video images. These include filters for ALEXA's Log C, Technicolor's CineStyle and Sony's S-Log. In addition to preset gamma correction, each filter includes sliders to subjectively adjust the color parameters of the image.

ROUNDING OUT THE FCP X PARTY

The biggest plug-in news is the compatibility with Red Giant's Magic Bullet Looks 2 and GenArts' Sapphire Edge. Changes in this update (and corresponding updated versions of Looks 2 and Edge) make it possible to use

FCP X Color Board



Top: Apple Motion 5
Middle: FCP X is now compatible with Red Giant Software's Magic Bullet Looks 2. Here, a clip is loaded into the Looks interface.
Bottom: FCP X is now compatible with GenArts' Sapphire Edge. In this image, a clip is loaded into the preset browser interface.

them with FCP X. If you are familiar with Magic Bullet Looks 2 and Sapphire Edge from other host applications, the functionality is the same in FCP X. Whereas Magic Bullet Looks 2 allows you to do all the effect modification within the Looks 2 interface, Sapphire Edge takes a slightly different approach. Edge effects are based on four filters (Film Damage, Film Style, Lens Flare and TV Damage) and a variety of transitions (blurs, bubbles, glows, etc.). Apply an effect to a clip and adjust the sliders or launch the preview application and pick from one of the presets. You can also subscribe to Sapphire Edge's FX Central service for monthly updates to the preset collection (the first year's fee is included with Edge purchase).

One thing to bear in mind is that filters inside FCP X are Motion 5 templates. Individual users can easily create custom filters in Motion 5 and then "publish" them to FCP X, where they show up as effects, transitions or generators. A number of enterprising editors have developed their own and offer them for free online; prolific developers include Simon Ubsdell, Alex Gollner and Brendan Gibbons. In fact, Ubsdell has come up with several very nice grading filters complete with on-screen color wheels.

New filters offer new visual styles and techniques, but heavy-duty filters impact performance. The built-in FCP X filters seem very efficient, and some of the lighter-weight plug-ins, like those from Digital Heaven or Nattress, play smoothly without rendering. Others, like Magic Bullet Looks 2 or Sapphire Edge, require a bit more horsepower and ultimately have to be rendered for smooth playback. Despite other improvements in this FCP X update, overall rendering performance for the application seems slow to me, even with 64-bit and OpenCL optimization. I hope we'll see some performance tweaks in the next round of updates.

FCP X 10.0.3 isn't going to change many minds in the ongoing heated discussions that surround this product. I believe 10.0.3 represents the version that Apple had originally intended to release last year, but some features simply weren't stable or ready by the ship deadline. Multicam may sway a few who have been on the fence, but those who were hoping that updates would make FCP X more like the "legacy" versions of Final Cut aren't going to be happy. It's pretty clear that FCP X, with its new approach to editing, is Apple's intended direction. For some, this is a freeing experience. Those users make up the segment that will test the waters professionally with FCP X and continue to be excited about how it evolves. **dv**

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THE NEXT DIMENSION IN NLE SOFTWARE

Sony Vegas Pro 11 Lets You Import, Edit and Output 3D Media

digital VIDEO Excellence Award

Vegas Pro 11 from Sony Creative Software is a full-featured editing system that includes Blu-ray and DVD authoring and advanced 3D titling. Vegas Pro 11 functions on both 32- and 64-bit operating systems and employs GPU-accelerated performance to speed rendering and effects applications. It also provides full stereoscopic 3D editing and accepts virtually all existing video formats. It works exclusively with Microsoft Windows 7 or Vista operating systems.

Quick Take

Product: Sony Creative Software Vegas Pro 11

Pros: Provides an impressive set of editing and DVD authoring tools in a single package. Strongest feature is the ability to mix formats, frame rates and resolutions effortlessly on the same timeline. Imports most video formats. Effects capabilities in both video and audio are comprehensive.

Cons: Learning curve is a bit steep as there are so many features, many of which are not displayed as visual icons. Optimized for use in a PC world.

Bottom Line: Ideal package for editors accustomed to Microsoft Windows who work with Sony, DSLR and AVCHD-based cameras, as it's optimized to work natively with these codecs.

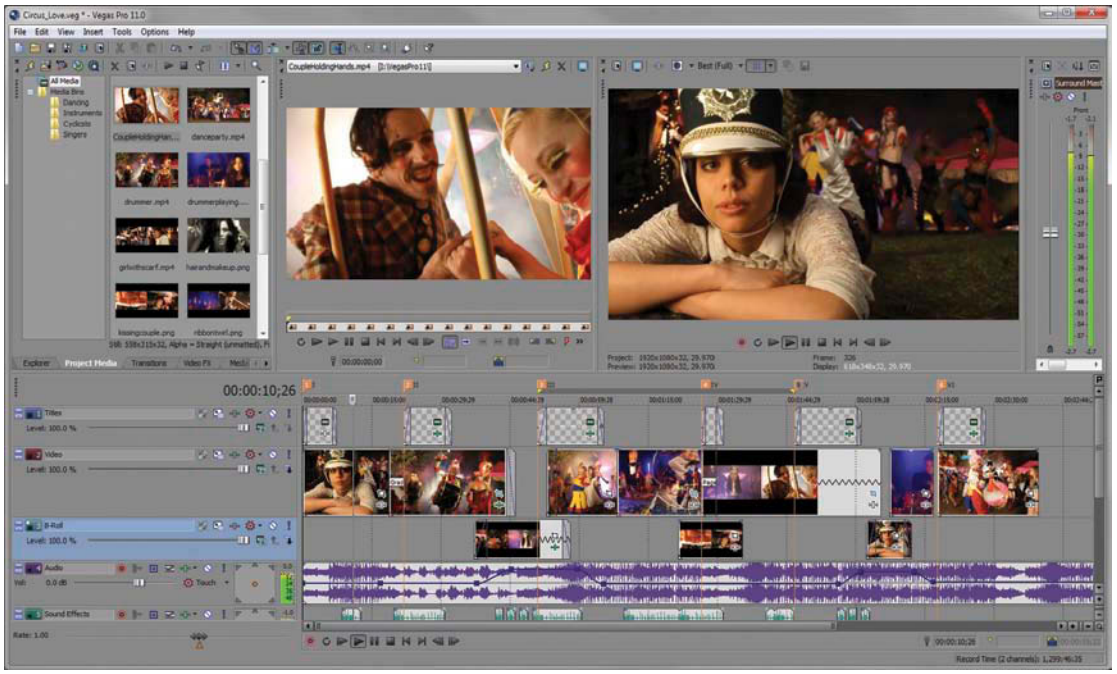
MSRP: $600

Online: www.sonycreativesoftware.com/vegaspro

FEATURES

Vegas Pro 11 is designed to work with every video format available, including stereoscopic 3D formats. For 3D monitoring, editors can use an SDI or HDMI output and select channel-specific top/bottom, side-by-side, blended or anaglyph displays.

A significant timesaving feature is the ability to mix resolutions or frame rates on the timeline without transcoding. Natively supported codecs include XDCAM, XDCAM EX, NXCAM, HDCAM SR, AVCCAM, RED R3D, AVCHD and AVC-based MOV files from DSLR cameras. These formats pass through the editing



Sony Vegas Pro 11's strongest feature is the ability to mix formats, frame rates and resolutions effortlessly on the same timeline.

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Vegas' multicam editing tools enable switching between as many as 32 video sources.

process unaltered, saving time and preserving original quality. But you can import any video file that your QuickTime Player will read, as Vegas harnesses QuickTime as a plug-in for file importing. Vegas Pro 11 supports 2K and 4K file resolutions.

The Vegas package offers many features found in more costly editing systems. It offers image stabilization, and its multicam editing tools enable switching between as many as 32 video sources. The titling tool offers true 3D in a stereoscopic environment and simulated 3D in a 2D environment. Templates make it easy to animate text and keyframe motion.

The effects palette is extensive, including more than 300 functional and stylized effects. In addition, Vegas Pro 11 provides more than 200 2D and 3D transitions. Many of these utilize GPU acceleration, which harnesses the processing power of the graphics card to speed up effects rendering and monitoring.

Effects are elegantly managed. Numerous effects can be added to each clip and are displayed in a chain in the effects window. Users can easily alter a specific effect or change the order of a sequence of effects.

The color correction tools provide extensive controls for improving or enhancing bland images or creating stylized effects. The effects palette includes most of the popular effects, including glow, lens flare, film grain, film effects, light rays and Gaussian blur.

The color correction tools are advanced enough to color correct and match footage effectively. Vegas Pro 11 provides three-way color correction in the customary curve or color wheel hue control options. There is also a one-step white balance correction tool.

Image stabilization and slow and fast motion are provided, with simple controls to adjust speed within a clip.

Vegas Pro 11 provides comprehensive audio mixing capabilities, with recording, editing and mixing of unlimited tracks, 24-bit/192 kHz audio support and 5.1 surround sound mixing tools. There are more than 30 audio enhancement effects, including EQ, compression, noise gate, reverb and pitch shift.

Specific system requirements and graphics card recommendations can be found at *www.sonycreativesoftware.com/vegaspro/techspec*.

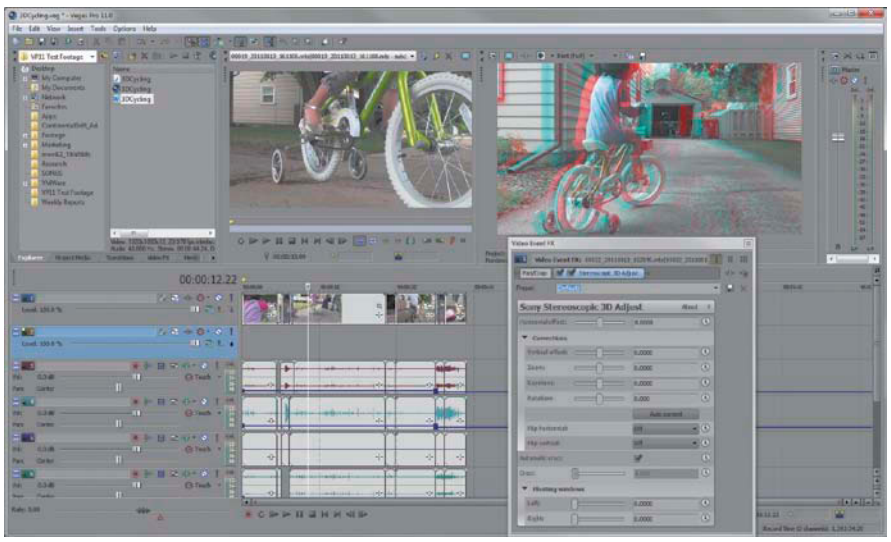
IN USE

I tested Vegas Pro 11 on a relatively modest desktop computer (AMD Athlon 2.2 GHz 64-bit processor, NVIDIA GeForce 7300 GS display adapter and 1 GB RAM) running Windows 7 Professional. My first lesson was to make sure you meet the minimum specs. I discovered that 1 GB of RAM is inadequate for smooth playback—2 GB to 4 GB of RAM is recommended. I also recommend installing one of the supported AMD or NVIDIA graphics cards for GPU acceleration, which makes rendering three to four times faster and improves real-time performance.

Vegas Pro 11 provides device control for those who still use tape. As I shoot on memory cards now, I used the file import method. I found that I could import any format that the QuickTime player recognizes. There are only a few formats that the editor will not readily accept; these are generally proprietary ones such as DVCPRO or Avid DNxHD in an MXF wrapper. This can be a limitation when working with some media, but overall, Vegas Pro will accommodate just about everything. And there are simple solutions available to ingest any format.

In terms of actual editing, Vegas Pro 11 has very comprehensive capabilities. It offers all of the basic timeline editing functions for trimming and adding transitions. I did find, however, that using Vegas Pro 11 is not as intuitive as some of its competitors. Many of the operations are not drag-and-drop but, rather, are located in small icons or keyboard shortcuts. Once you learn them, editing is a snap, but it takes some time at first to find the tools for the job. For example, when I wanted to slice a clip on the timeline, there was no obvious razor tool. After some research I found all I have to do is press "s" on the keyboard, but this is not readily apparent. I had the same experience when I wanted to remove an effect. There is a tiny icon that does the job, but it's located in the effect control window, not on the timeline. It would be helpful if they grouped editing tools into a mini menu.

Vegas Pro 11 does an excellent job of mixing formats, codecs, resolutions and frame rates in a project. I set up a project as 1080/24p and added formats including DV 30i and 24p, 720/24p and 1080/60i. The sources included AVCHD, H.264 from a DSLR, standard DV and transcoded P2 footage. All the formats mixed on the



Vegas Pro 11 provides the ability to import, adjust, edit, preview and output stereoscopic 3D media using industry-standard professional delivery formats including single or dual files with side-by-side, top/bottom or line-alternate encoding. Anaglyph monitoring and output are also supported.

timeline, and I was able to render the project out into a single format. I wasn't able to directly import Panasonic P2 clips, but a plug-in is available that makes it possible.

The effects palette is wonderful and includes many effects that would be expensive to purchase separately, such as film grain, lens flare and lighting effects. They are easy to apply, and Vegas' architecture makes them easy to manage. Effects are displayed in a chain, allowing you to go into any effect and adjust it or change the order of effects. This can be vital when one effect interacts with another. For example, adding glow to an image at the end of a chain may not look as good as when it's placed at the beginning, where the highlights are brightest.

I tested both image stabilization and motion control. Image stabilization uses a simplified interface with few controls, but it achieves very effective results with far greater ease of use than the more complicated versions. It took me a while to figure out how to create slow motion (Vegas Pro 11 calls it "time stretching"), but the effect is easy to apply. Just drag a clip's end

to make it longer or shorter to achieve slow or fast motion. More precise controls are available that allow you to insert keyframes and contour the motion change. The slow motion was very smooth as Vegas Pro creates and inserts frames as opposed to repeating them.

Space does not permit an in-depth review of the included DVD Architect Pro application, but I'll note that its diverse assortment of templates makes it intuitive and easy to learn. It burns both standard and Blu-ray DVDs with equivalent ease.

SUMMARY

Sony Vegas Pro 11 provides a very impressive set of editing and DVD authoring tools in a single package. The learning curve is a bit steep as it has so many features, many of which are not displayed as obvious visual icons.

Its strongest feature is the ability to mix formats, frame rates and resolutions effortlessly on the same timeline. And its effects capabilities in both video and audio are quite comprehensive.

However, Sony Vegas 11 is developed for use in a Sony codec environment and a PC world. Those who use a wider range of cameras and codecs or work with material from a Mac environment will find some limitations. It's ideal for editors accustomed to Microsoft Windows who work with Sony, DSLR and AVCHD-based cameras, as it's optimized to work natively with these codecs. **dv**

JAY HOLBEN

DESIGNED FOR DSLRS

Sachtler's Ace System Offers Smaller Cameras Solid Support

As HDSLRs and smaller, lighter-weight cameras gain in quality and popularity, shooters are finding the need for a professional, yet inexpensive camera support system to integrate with the more inexpensive cameras.

Sachtler has stepped up to fill this niche with Ace, a lightweight tripod and head system designed specifically for use with smaller cameras. Able to accommodate a payload of up to 8.8 lb., Ace is perfect for decked-out HDSLRs or smaller HDV cameras. The tripod itself is a glass fiber reinforced composite material with a 75mm ball socket. Ace comes with its own fluid head, with a range of +90° to -75°, that performs as you would expect a Sachtler to perform.

The whole unit is incredibly lightweight. I liked the positive locks on the legs, with knuckles rather than the simpler tension clips you see on a lot of inexpensive tripods. The locks on the two-stage legs gave me confidence that they weren't going to slip.

Ace has a built-in spreader that is adjustable but not removable. A fair range of spreading is possible, but I'd like to be able to remove the spreader to better position the tripod on uneven terrain or stairs.

For an inexpensive tripod, having a ball-leveling head is an incredible bonus. For a professional tool, it's a must.

The head has a long quick-release plate (104mm), which allows a good range of positioning options to balance the load on the head. It has calibration marks, which I really like because they tell you where you need to position it for repeat setups.

The 1/4-20 screw in the base of the quick-release plate has a tiny locking-pin plate, which is great for some cameras, but I had to remove it for use with my Canon EOS 7D, as the Canon doesn't have the pin hole in its base.

The head itself has four stages of drag for both pan and tilt functions. There is an "off" (no drag) setting as well as light, medium and heavy. I really liked the no-drag option; you don't see that on inexpensive tripod heads, especially not on one that functions so smoothly. The three stages of drag are well designed to provide a great range of operation.

For an inexpensive tripod, having a ball-leveling head is an incredible bonus. For a professional tool, it's a must.

There are five stages of counterbalance on the head, which allowed me to quickly adjust for different camera configurations and counterbalance each of them perfectly.

The pan and tilt locks are located on the left side of the head and left front, making for easy access to locking and release while keeping the right hand on the pan handle. This is what you'd expect from a professional head—and it never ceases to amaze me how often this simple consideration is not incorporated in head design.

The pan handle can be mounted only on the right side, which I found a little limiting. There are certainly occasions when having a mount on the left side would be handy, or when being able to add a second handle would be preferred.

Range of height for the legs is good. Lowest mounting plate height is 31" with legs down and spreader full spread. 66.5" is the highest with the legs fully extended and the spreader in as tight as it will go.

I loaded it up. I put on my Canon EOS 7D, along with a K-Tek Norbert cage, Marshall V-LCD50-HDMI monitor, Litepanels MicroPro Hybrid and Switronix TorchLED Bolt to get the weight right at the top end: 8 lb. With a few adjustments to the sliding base plate position, I found that—even with this load—the top stage of counterbalance worked wonderfully to keep the load balanced and even on the Ace head. I did wish that I had one more stage of drag with all of that weight on the head, but the third stage was workable.

The unit comes with a custom Petrol soft carrying case. It's easily carried over the shoulder and lightweight enough to add to any small kit without burden. **dv**

Quick Take

digital VIDEO Excellence Award

Product: Sachtler Ace tripod system

Pros: Excellent price point, all-in-one head and tripod system, professional control and performance, great flexibility, lightweight.

Cons: Just the tiniest details: only three drag settings, spreader not removable.

Bottom Line: True professional performance from a lightweight and extraordinarily affordable tripod/head system that provides top-end results for users of HDSLRs and smaller cameras.

MSRP: $615

Online: www.sachtler.com/en/ace.html

Sachtler Ace Specs

	System Ace M MS	System Ace M GS
Payload	0 – 8.8 lb.	0 – 8.8 lb.
Weight (without bag)	9.7 lb.	10.1 lb.
Bag	1.1 lb.	1.1 lb.
Height min.	30.7 in.	22.4 in.
Height max.	66.5 in.	68.1 in.
Transport length	33.5 in.	34.3 in.

Fluid Head Ace M Specs

Payload: 0 – 8.8 lb.
Weight (incl. pan bar, bowl clamp and camera plate): 3.7 lb.
Counterbalance: 5 steps + 0
Drag: 3 steps vertical and 3 horizontal, + 0
Temperature range: -22°F / +140°F
Tilt range: +90 to -75°
Camera plate: Ace plate (slide in)
Camera screws: 1/4", pin
Spare screws: 1/4", 3/8"
Sliding range: 104 mm / 4.1 in
Camera platform: With scale
Pan bar: One, fixed, type Ace
Leveling: Level bubble

TOOLKIT

New Gear

AVID

STUDIO IPAD APP

Avid's editing application for the Apple iPad allows users to edit videos, photos and audio files that exist in their iPad library, or media imported from iTunes or cameras. Users can arrange clips in the Storyboard, make edits using the Timeline, and enhance projects with transitions, effects and a soundtrack. Avid Studio lets users share movies directly to YouTube, Facebook and other online outlets, or export projects for further editing on a PC. **www.avid.com**

NIKON

D800 DSLR CAMERA

With a 36.3-megapixel (7360 x 4912 pixel resolution) FX-format (35.9mm x 24mm) CMOS sensor and a 91,000-pixel RGB Matrix Metering System, the Nikon D800 DSLR offers full HD 1080p video, manual control, uncompressed HDMI output, and low-light video capability. For video, users have the choice of various resolutions and frame rates, including full HD 1080 at 30/24p and HD 720 at 60/30p. For professional and broadcast applications that call for outboard digital recorders or external monitors, users can stream an uncompressed HD signal directly from the camera via the HDMI port (8-bit, 4:2:2). Utilizing the B-Frame data compression method, users can record H.264/MPEG-4 AVC format video for up to 29:59 minutes per clip. **www.nikonusa.com**

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Designed for field and studio applications, JVC's DT-X71 family of 7" AC/DC LCD monitors offers 1024 x 600 resolution with a 160-degree viewing angle, and can display 480i, 480p, 720p, 1080i and 1080p video signals at a variety of frame rates. Features include an adjustable 16:9/4:3 display, dual three-color tally lights, underscan and overscan, image flip, customer-editable video title, Canon DSLR scale zoom-in and safe mark display. **http://pro.jvc.com**

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ASSIMILATE

SCRATCH 6.1

The 6.1 version of Assimilate's SCRATCH digital intermediate finishing tool offers enhanced support for RED workflows, with optimized image processing based on output project resolution. New "Simple Blend" and "Magic Motion" features allow artists more flexibility with high dynamic range (HDRx) media. Additional improvements include support for Tangent's Element control panel and for SDI output on the Mac via AJA KONA 3G cards. **www.assimilateinc.com**

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DATAVIDEO

TP-200 IPAD TELEPROMPTER

Allowing video pros to use an Apple iPad as a teleprompter, the TP-200 ships with a 9.8' wired remote control and a light-absorbing "sock-cloth" that shields the front of the camera and the back of the prompter. Using 60/40 beam-splitter glass for bright words with minimal light loss to the camera, the TP-200 runs with free, downloadable software. **www.datavideo.us**

IKAN CORP.

ELITE PROMPTER

A teleprompter application for the iPad, ikan's ELITE Prompter works with standard script formats ASTX, FDX, XAV and TXT. It features a rich text editor with multi-language support. Users may import scripts directly from Adobe Story and Dropbox. The prompter application supports video output to external HDMI or VGA monitors and allows the use of a Bluetooth keyboard for text input. ELITE Prompter may be used in either landscape or portrait orientation. **www.eliteprompter.com**

AUTOSCRIPT

LED8TFT TELEPROMPTER

The 8" LED8TFT on-camera LED prompter includes a built-in tally light, the tally sensor input, an illuminated control panel for easy viewing, and the mounting pattern to incorporate Autoscript's Clock Plus, Tally Plus or Cue Plus accessories. For outdoor use, the LED8TFT's "high bright" provides 1700 nits of brightness, enduring that the prompter can be seen in bright sunlight. With both composite and VGA inputs, it is powered from an external AC-to-DC 12-volt power supply. **www.autoscript.tv**

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LIGHTS ON BROADWAY

Cinematographer David Mullen's Methods for *Smash*

Cinematographer David Mullen, ASC (*Big Love, United States of Tara*), takes on some unusual lighting challenges for his work on the musical theater-themed NBC series *Smash*. The show, from Universal Television and DreamWorks, examines the world of Broadway theater through the experiences of a disparate group of characters mounting a Marilyn Monroe-themed musical production they hope will take the Great White Way by storm. *Smash* follows the creators, producers, stars, and those hoping for stardom (the cast includes Debra Messing, Katharine McPhee, Anjelica Huston and many others) as it takes an entertaining and dramatic look at the magic of the theater from a wide array of perspectives.

PHOTO BY PATRICK RANDAK/NBC

Settings for the show run the gamut from all-out stage musical numbers to naturalistic storytelling that follows various characters through the tribulations of their personal and professional lives during this highly charged period. Lighting for the musical numbers is overseen by Broadway theatrical lighting director Donald Holder (*Spider-Man: Turn Off the Dark*), who has the time and tools to mount actual numbers as he would for a live show; he can spend two days programming lighting cues to the SMPTE timecode of the music playback and then work with Mullen on the day of the shoot to refine the work for camera. What may be a perfect light show for a live audience might require quite a bit of fine-tuning where two or even three Steadicam or crane-mounted cameras need to get in close to the performers.

"We go through shot by shot, and when we spot a shadow that doesn't belong there, he can go in and alter his program to maybe use a different light from somewhere else to accomplish the same effect," says Mullen of his collaboration with Holder.

In between these full-fledged theatrical

PHOTO BY MARK SELIGER/NBC

(L-R) Katharine McPhee as Karen Cartwright, Megan Hilty as Ivy Lynn

numbers and the regular dramatic scenes that occur in rehearsal halls, offices and apartments, however, another sort of "reality" is apparent in *Smash*. In this reality, the viewer is watching something "real" that's enhanced by the characters' vivid imaginations. Creating these often quite elaborate musical sequences is entirely the responsibility of Mullen and his lighting crew, led by gaffer Bill Almeida.

"These scenes can take place anywhere," says Mullen. "We can be in the middle of a [traditionally shot] scene and suddenly the room becomes a more fantastical place and the character starts to break into song in their mind. Other times you're not supposed to be sure where they are. They're in a kind of limbo, singing, dancing. These scenes can run the gamut between very simple and very complicated. I'm learning by trial and error what are the best ways of creating these moments that aren't full-on Broadway stage numbers or normal dramatic scenes, but are something in between."

While the Broadway lighting makes extensive use of HMI and LED units, Mullen prefers to use tungsten light wherever possible. "I like the dimability of tungsten lights," he explains. "I constantly need to adjust the light output by very small amounts, and it's so easy to either run them through a dimmer board or put them on Variacs before we roll. I also think that for cinematography, tungsten is a nicer color light on the face. HMIs and LEDs can have a small green bias or other tints where I feel I'm not getting a true 'white light' out of them."

The series is shot on a number of stages in the New York area (in the Long Island City portion of Queens and in Brooklyn's Greenpoint).

PHOTO BY PATRICK HARBRON/NBC

(L-R) Executive producer David Marshall Grant and director of photography David Mullen behind the scenes in New York's Times Square

PHOTO BY WILL HART/NBC

(L-R, seated) Christian Borle as Tom, Debra Messing as Julia, Anjelica Huston as Eileen. (In mirror, center) Megan Hilty as Ivy Bell

PHOTO BY MARK SELIGER/NBC

(L-R) Jack Davenport as Derek Wills, Katharine McPhee as Karen Cartwright, Megan Hilty as Ivy Lynn, Raza Jaffrey as Dev Sundaram, Debra Messing as Julia Houston, Christian Borle as Tom Levitt, Anjelica Huston as Eileen Rand, Brian d'Arcy James as Frank Houston, Jaime Cepero as Ellis

The show makes use of a relatively small stage in a converted warehouse—its ceilings are too low to stage elaborate Donald Holder musical sequences, but it's flexible enough to accommodate performances that either appear to be on a stage (though the "audience" must be obscured by blackness or lens flare) or take place in a limbo world inside a character's imagination.

Since these scenes are either partially or entirely fantasy, Mullen explains, the traditional concerns about "motivation" of the light really don't matter.

Mullen has tried quite a few approaches to give each of these fantasy or semi-fantasy numbers a unique feel. "Sometimes I'll get some intense backlighting from 'firestarter' PAR cans, and then I'll just fill the actor's face with a white card right by the camera. Of course, that's not something you would do in a real stage show, but it's a nice effect [for the camera]."

Mullen explains that these types of scenes allow for just enough theatricality to set the mood without fully declaring themselves as "musical numbers." "I might use an ETC Source Four as a follow spot," he elaborates, "or maybe I'll have a 2K Chimera on a dimmer that could subtly fade up and give me a very soft key light."

The first of these hybrid-type scenes that Mullen shot featured McPhee's character, Karen, inside a dance rehearsal space lit by daylight through windows; the sequence transforms in her mind into a fully realized routine with McPhee in character as Marilyn Monroe performing a number called "The 20th Century Fox Mambo."

"The space has a low warehouse ceiling with just some overhead fluorescent lighting," the cinematographer says. "Our fluorescents aren't dimmable—they're either on or off—so I knew I couldn't have one lighting cue where the room would transform from fluorescent to a stage show look. In that case, we conceived of hiding the transition in a cut rather than a dimmer board cue. There is a hard cut to the fantasy, and I gelled all the windows on the set with a deep pink gel and I put rows of old-fashioned-looking movie lights—open-eyed 5Ks—in a row right outside the windows in front of the New York City backdrop. We took the lighting off the backing and left the 5Ks and a smaller row of PAR cans all pointed into the camera lens through this pink gel. We put a gold gel over [an ETC] Source Four and used that as a follow spot on her.

"So that was how we transformed this bright fluorescent-lit space into a darker area with pink and gold lighting," Mullen continues. "Then we had the 5Ks and the PAR cans on a dimmer board, and our dimmer board operator, working on the fly, could flash them up at full intensity during peak moments in the song and then dim them back to a lower level so they were kind of pulsing to the music."

But perhaps even more challenging are the fantasy numbers that aren't set in a theatrical environment at all. In one, McPhee's character is not feeling well and we find her alone in her apartment singing to her iPod. "We had

PHOTO BY PATRICK HARBRON/NBC

Director of photography David Mullen

conceptual discussions about the scene," Mullen recalls. "The script didn't indicate that it was a fantasy sequence, but some of the executives still wanted to see fantasy lighting and theatrical colors. So are we looking at something 'real' or something 'not real'? I worked on finding ways to make those scenes look a little more magical without crossing the line into theatricality."

"That's the tricky part of these scenes," Mullen says of the line between shooting reality and fantasy. "Sometimes it's a matter of just timing a camera move so the sun flares into the lens at a key moment in the song. Maybe the sun gets a little bit sunnier or the colors become a little bit richer right at a certain moment in the [music]."

As he was prepping to shoot a Bollywood-style musical sequence, Mullen described his work: "It's fun and challenging. You have to think in bold strokes and come up with exciting lighting cues all the time. We've done [the show] enough to know the basic ways to shoot in terms of lighting, cranes and Steadicams, but each dance number is unique unto itself and the lighting has to be conceived from the ground up." **dv**

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Io XT	AJA Video Systems	$1,495		Thunderbolt device with two ports for use mid-chain. Supports all SD/HD resolutions and frame rates. Dual Link and 3G. Up/down/cross-conversion. Io XT is basically AJA's flagship KONA 3G card in an external Thunderbolt peripheral. Look for a full review in the coming months.
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Intensity Shuttle Thunderbolt	Blackmagic Design	$239		Complete 10-bit capture and playback and a breakthrough price. HDMI, composite and S-Video in/ out. One Thunderbolt port. Supports all Mac NLEs.
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www.lacie.com				
Echo ExpressCard/ 34 Thunderbolt Adapter	Sonnet	$149		ExpressCard/34 adapter to connect to Thunderbolt chain. Allows the use of any ExpressCard/34 card (such as Sony SxS cards) or ExpressCard/34 adapters (such as eSATA adapters). A great way to repurpose your old peripherals at a reasonable price.
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ThunderExpress	CalDigit	$TBA		Another announced product but still awaiting pricing and shipping info. Allows a CalDigit HD-series RAID to connect using Thunderbolt with one cable from the peripheral device. Another way to repurpose high-speed, high-capacity PCIe RAIDs to the world of Thunderbolt slotless Macs.
www.caldigit.com				
MXO2 Thunderbolt Adapter	Matrox	$199.95		Allows connection of Matrox MXO series of I/O devices via Thunderbolt. Adapter connects a Thunderbolt cable on one end and MXO's multi-pin cable on the other. Preserves your investment in Matrox devices when you switch to Thunderbolt Mac. The Matrox MXO line of capture devices with optional H.264 compression is also available with a Thunderbolt interface.
www.matrox.com				
UltraStudio 3D	Blackmagic Design	$995		Portable Thunderbolt-based 3D capture and playback. Dual Link or 3G input as well as stereo 3D input via HDMI. A complete capture solution for Thunderbolt peripherals. Particularly useful to the 3D producer. We will be doing a complete review in a future issue.
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OLIVER PETERS

THE SUITE LIFE

A Guide to Designing Your Own Edit Facility

The lower cost of gear opens more opportunities for independent editors, so it's time to look at some good practices for DIY edit facilities. The considerations in designing and constructing your own suite include power, HVAC, ergonomics, acoustics and equipment configuration. This article is intended for the small- to medium-sized post-production studio on a limited budget.

Acoustic treatments and striking design are part of the Boogie Studios (Montreal) Pro Tools mixing suite.

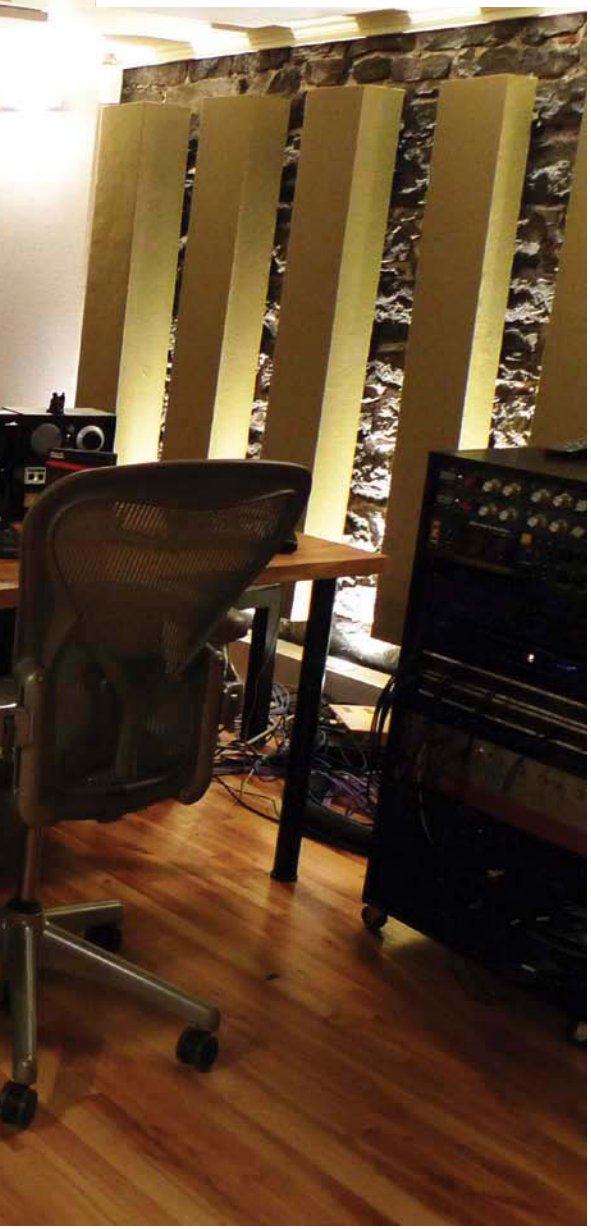
POWER

Modern electronics don't push power demands the way they did in the days of racks loaded with video gear. Most electrical circuits intended for standard office and even home use will be adequate to support the average nonlinear edit suite. If you have the ability to bring in an electrician and improve the service, then you will want a dedicated circuit (or two) for each editing room. These should be "home runs" direct from the outlets in the suite to the circuit breaker box.

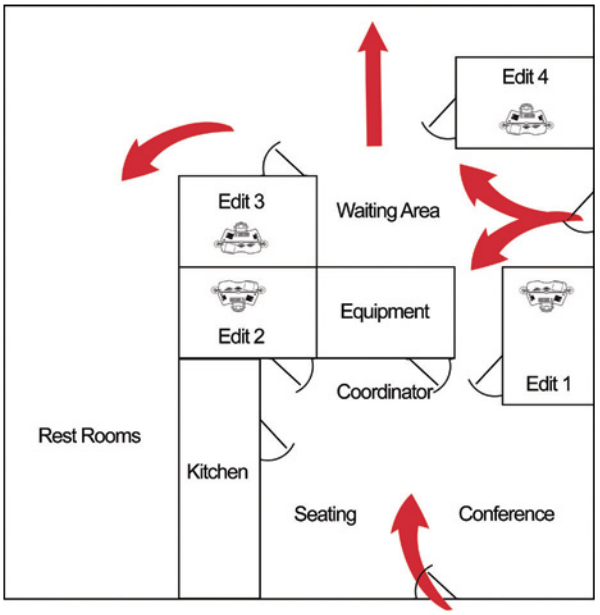
Uninterrupted power supply (UPS) units are a "must have." I recommend the larger (1200 series and up) APC units for each workstation, storage array and equipment rack. These not only supply short-term battery backup in the event of power failure (long enough to safely close your project and power down), they also maintain a stable frequency for your electronics. Most units include outlets with battery backup as well as outlets that are merely controlled pass-throughs. Your computer, storage and the primary display should be on the battery backup outlets, but peripherals like video monitors, mixers and speakers may be plugged into the other outlets.

HVAC (HEATING, VENTILATION AND AIR CONDITIONING)

You typically won't have much control over HVAC in an existing building, but be sure



Above: Tinmen Productions (Orlando) Edit 4 is designed as a warm, client-oriented space.
Below: This layout displays a functional design for a multi-suite edit boutique installed into rental office space.



your service is adequate for your needs. With modern editing workstations, the biggest heat generators will be large storage arrays, as well as monitors and displays. The computer itself doesn't generate that much ambient heat. If you have the ability to relocate large storage arrays into an adjacent room or a centralized location (in the case of a SAN), then it will be easier to control the airflow, temperature and comfort in the edit suite. Likewise, the more humans in the room, the warmer it gets, so suites designed for a single editor with the occasional client won't demand as much cooling as one that routinely has half a dozen folks in there working. If you can specify the HVAC design and installation, then go for a system based on high volume and low velocity. Such units move a lot of air at slower speeds through the ducts and are better for sound-sensitive situations.

ERGONOMICS

Comfort is important when you're in a room for hours on end. Make sure monitor position, desk height and chair design are optimal for the way you work. The proper height for the desk surface is between 26" and 29" to the top. When you are seated, your eyeline should be at the top portion of the computer display.

According to these guidelines, placing a computer monitor (with its own stand) on the raised bridge of a custom tech console forces the operator to look slightly upward, resulting in shoulder strain. I prefer consoles with no bridges or, if budget permits, adjustable ones, like those from Biomorph that can be placed lower than the table surface. There are no hard and fast rules, but a large, flat table surface is often preferable to many of the custom tech consoles. These can be purchased at most furniture outlets or custom-built by a local millwork shop.

Chairs are a subjective choice, but it could be the most critical piece of gear you buy. There's a reason Herman Miller Aeron chairs decorate most tech companies, and it's not just the design. These (and similarly designed products) are durable and provide back comfort over long periods of work.

If you are so inclined, there is some research that indicates working while standing up is healthier. Walter Murch is a huge advocate of editing at a stand-up console. You may wish to look into this alternative approach and modify these recommendations accordingly.

ACOUSTICS

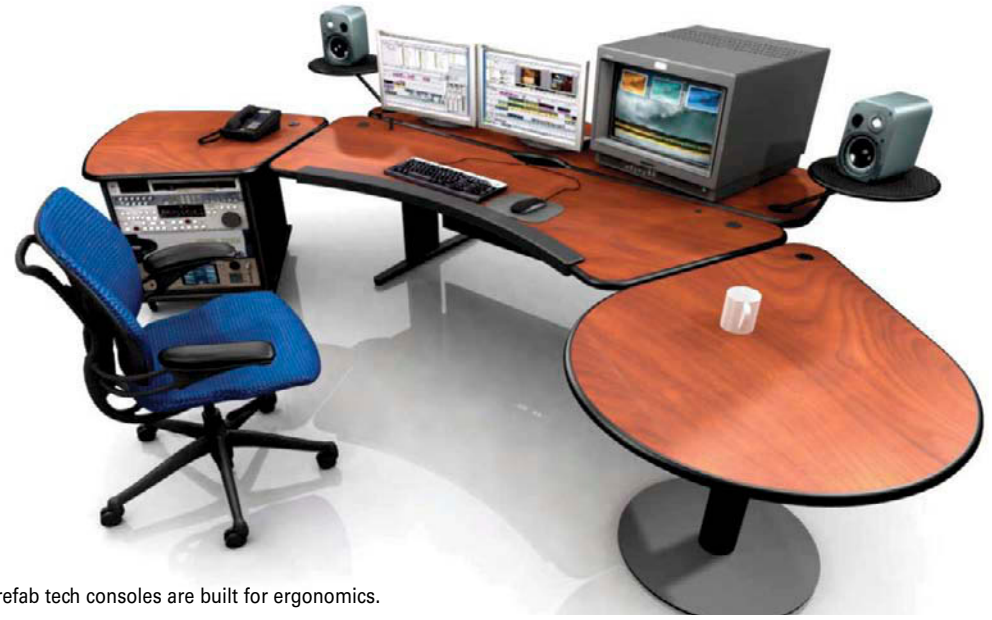
Controlling sound waves boils down to issues of transmission and treatment. We are talking about edit suites, not recording studio spaces, so the acoustics don't have to be perfect. You want the room to be as free of annoying equipment fan and air conditioner duct noise as possible—moving storage arrays out of the suite and using

a low-velocity HVAC system will take care of the bulk of that. You are concerned mainly with keeping the noise from the suite from bothering neighboring offices, as well as keeping most exterior noise out while you are working. This means adopting some studio design concepts without going overboard.

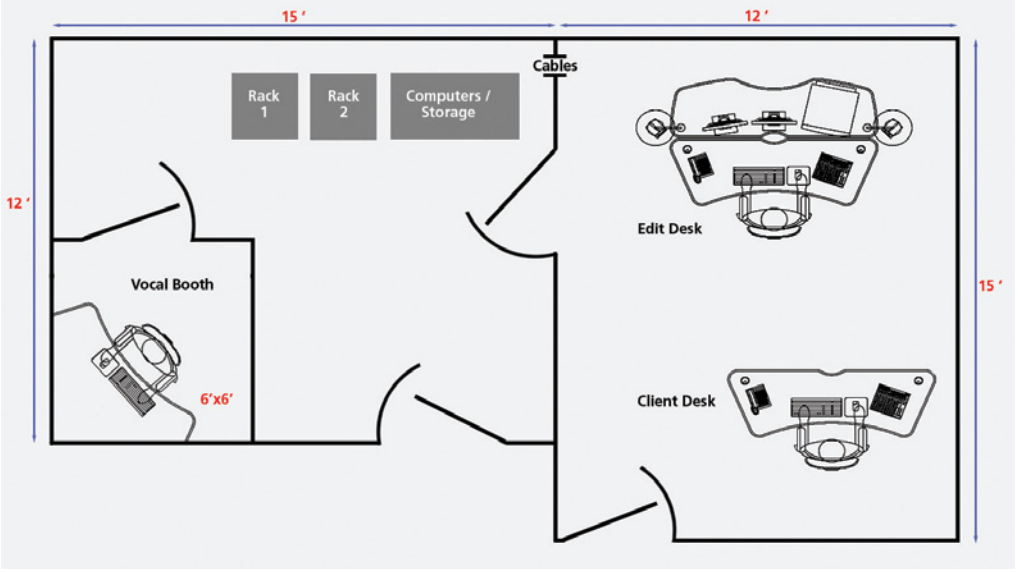
Mass is your friend. The easiest fix to cut down sound transmission is to double up on the drywall. This means two layers on the inside and outside walls of the room. Use soundboard, if you like, for at least one of these layers. Insulate the space in the wall (spray-in foam is a good idea). Screw the drywall to the studs instead of nailing it, caulk all joints and offset the seams between the two layers. If you want even more isolation, build a double-thick wall, with two sets of studs and more insulation. Don't forget the ceiling, since a simple suspended ceiling won't prevent sound from going up and over the wall. You can cap the ceiling with drywall as well, effectively creating a room within a room. Lastly, remember the doors. Use solid-core wooden doors and tight weather-stripping around the jam and at the floor.

Sound treatment involves eliminating standing waves (reverberation or echo) caused by hard parallel surfaces and managing bass response (so the mix isn't too thin or too boomy). If you have control over the room construction, then avoid true parallel walls by slightly slanting some of the walls and adding an angle to the drop ceiling. The more items in the room, such as furniture, bookshelves and wall hangings, the more natural interruption there is to the bounce of sound waves. Furthermore, you can purchase a variety of prefab sound treatment kits and ceiling tiles that will help to mitigate reflections and control bass. Auralex and Primacoustic are popular manufacturers.

The good news is that many leading studio designers post examples of their rooms all over the internet, complete with floor plans. Fifteen minutes of web searching will yield an entire library of studio design options for the ambitious.



Prefab tech consoles are built for ergonomics.



This layout displays a workspace for a single-editor facility. It is designed to accommodate the editor, client and a minimal amount of equipment. A small vocal booth has also been designed into the area.

EQUIPMENT CONFIGURATIONS

Thanks to new technologies like Intel's Core i5 and Core i7 processors and Apple's Thunderbolt protocol, the footprint of modern editing workstations can be smaller than ever. A small shop's post suite—if it doesn't need to handle legacy hardware—can easily be powered by an Apple iMac, MacBook Pro or an HP EliteBook. I still prefer a workstation, like a Mac Pro or an HP Z-series machine, but it's no longer a given that such a unit will provide the fastest performance.

If you are building a new room, it's insane to even contemplate purchasing a VTR of any sort. So much acquisition and delivery is file-based that it makes better business sense to utilize outside services like Digital Service Station or a similar local vendor for the few times a year when tape is a requirement. This means that racks of terminal gear are reduced or even eliminated, and the "747 cockpit" staples of the edit bay like scopes and banks of monitors are overkill. It doesn't hurt to integrate a wiring harness and space for one VTR, though, in the event that you need to accommodate a rental deck.

The current trend in small suite design is to build a room that's very client-friendly and not intimidating. Usually this involves a workstation with one or two displays, near-field audio monitors, a small mixer (mainly for volume control) and one or two video monitors. I like to work with dual displays (like two Apple 20" LCDs), but a single larger monitor, perhaps a 27" or 30", is also quite functional. In fact, a lot of the newer

software, like Autodesk Smoke for Mac, Apple Final Cut Pro X and Blackmagic DaVinci Resolve, is optimized for single displays. Just remember that with smaller but higher-resolution displays, the size of type will also be smaller. For example, the 1920 x 1200 pixel display of a 17" Apple MacBook Pro yields tiny text on screen.

The topic of scopes and broadcast video monitors sparks lively debate among pro editors. I've been pretty happy with the results I get from internal software scopes in FCP, FCP X, Avid Media Composer, Resolve and Apple Color. A good option if you want more is Blackmagic Design's UltraScope. Naturally, if you need external monitoring, you'll need a capture card of some sort. That's where Thunderbolt comes in: Thunderbolt allows you to daisy-chain storage (like the Promise Pegasus array) and monitoring. For instance, a single Thunderbolt port would let you connect storage, an AJA Io XT and an external Apple 27" display all in a single path. Then use the AJA unit to connect the UltraScope and broadcast video monitors.

A really nice layout places a 27" iMac (or 27" or 30" display) at the center of the console, with a 17" broadcast-grade LCD to the left and another display with the UltraScope signal on the right.

Color-accurate broadcast display choices depend on your budget, need and tolerance. Sony's OLED monitors are beautiful but pricey. I would suggest Panasonic, JVC, TVLogic or Flanders Scientific as good alternatives. If you want a large wall-mounted screen to "wow" the client, go with one of the Panasonic presentation-grade plasmas. Even their high-end consumer plasmas provide a wonderful image.

A really nice layout—which still maintains that "bridge of the *Enterprise*" look—would place a 27" iMac (or 27" or 30" display) at the center of the console, with a 17" broadcast-grade LCD (for video monitoring) to the left and another display with the UltraScope signal on the right. This would be capped off with a 50" Panasonic plasma mounted on the wall. **dv**

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STEFAN SARGENT

HERO SHOT

GoPro Goes Pro for A Range of Applications

No longer a niche camera for blond, blue-eyed surfers and mud-splattered sporting enthusiasts, GoPro HERO2 is an incredible tool for *all* filmmakers. The lens is twice as sharp, the processor twice as fast, the chip twice as big as predecessor GoPro models. There's auto white balance, a mic input, HDMI out. The list goes on and on...

So it doesn't have manual exposure, so the optional viewfinder is widgey, and the video is a low 15 Mb/s—the fact is, the images I'm getting match those of HD cameras costing 20 times more.

GOPRO GOES CORPORATE

When Flip was zapped by Cisco, I bought a GoPro. I took it with me while I was shooting a 30-second TV spot. And guess what: 50 percent of the shots in the commercial are from that day-one GoPro.

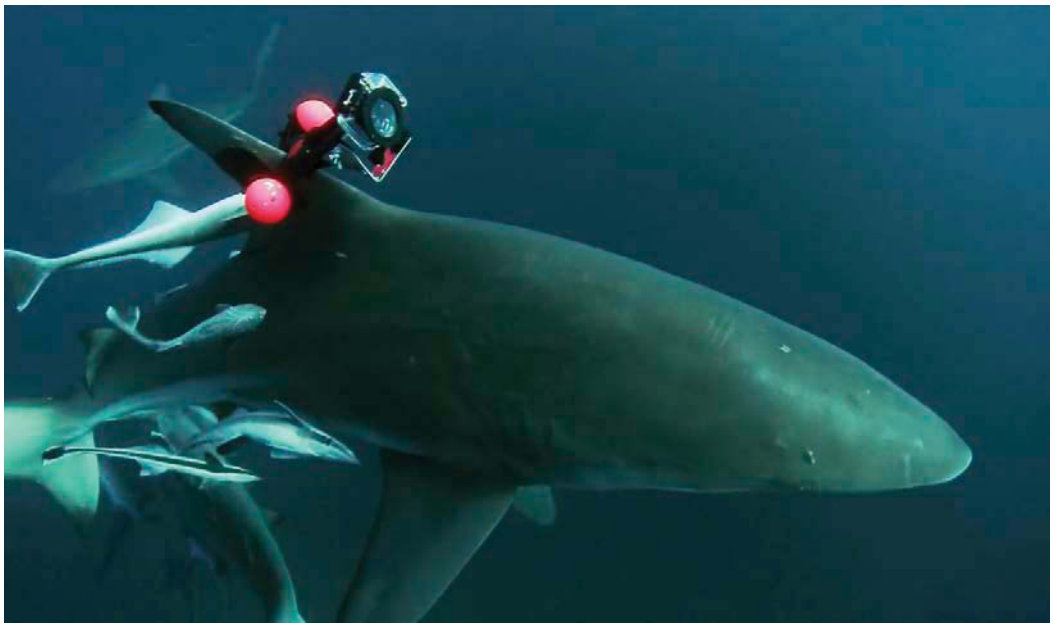
Since then, I regularly use GoPro as a third, behind-the-speaker camera. No one notices it and it gives me the important reverse angle coverage I need.

GoPro records in 4 GB chunks. That means that every 30 minutes I lose sync with the other cams in the setup. Used to be a drag in editing, but now, with FCP updated to 10.0.3, I can sync up automatically. Check *"Use Audio for Synchronization."* Bingo—instant sync.

HOW WIDE CAN YOU GO?

If I have one gripe with GoPro, it's the lens: it's just too wide.

The new HERO2 has *three* 1080p fields of view: 170°, 127° and, *wonder of wonders* ('cause it's nowhere in the printed user manual), a 90° FOV called "narrow." Narrow? 90° is narrow? In my 16mm filmmaking days, I had a 5.9mm Angenieux and I loved it—my favorite lens, it



Above: The Discovery Channel hired this shark as an underwater videographer, outfitting him with a GoPro camera and Eye of Mine flat lens housing.
Below: Phil Clark at the Metreon, GoPro on the stage behind him providing reverse-angle shots

GoPro HERO2 wide shot (170°)

My new Steadicam Smoothee

gave me a wide, wide 90° at *f*/1.8. Now the bad news...

GoPro's 90° "narrow" is a big disappointment. The GoPro folk say it's not digital zoom; you lose no quality—hmmm... Outdoors it's OK, but inside: a flop—with a ton of video noise. Big disappointment, but there IS a solution. Read on...

ENTER THE AFTER MARKET

GoPro's *after market* has a collection of alternative lenses. Bang goes your GoPro warranty—a sacrifice I am prepared to make.

I buy a $99.99 4mm lens—it's 90°—from the curiously named RageCams.com. To my surprise, it's shaper and better than HERO2's narrow view and there's *no video noise*. It's like having my old Angenieux 5.9mm back again. Come to daddy...

Inspired by the 4mm, I invest in a 2.8-12mm varifocal lens. It

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I shot this :30 television spot for Angel Island with a GoPro camera.

goes from a wide 135° to a tight 28°. It's not a zoom, as you need to carefully refocus each time you change the field of view. To focus, I use an Ikan VX9e HD monitor looking at HERO's HDMI output. If you can live with twitchy, pernickety focus, I recommend the varifocal.

RageCams and others have many more screw-in lenses for GoPro. They say the 50mm lens (7.8°) is *"ideal for capturing license plate numbers at 100 feet away."* Now why would you want to do that?

We all know that GoPro comes in a waterproof case—great for surfers, skiers and dirt trackers. But use it underwater and the picture goes soft and fuzzy. GoPro specialist EyeOfMine.com solves that with a $99 flat lens housing. Discovery used it, riding on the fin of a shark.

HERO2 with RageCams' 4mm lens

BUT WHY USE A GOPRO?

I'm glad I asked that question. Here are just three answers: It's small and inconspicuous, cheap, and lightweight.

SMALL AND INCONSPICUOUS

I'm in Washington shooting Peter Meyers delivering his "high-performance" lectures. One of my Sony HDVs is locked off on a wide shot. I'm operating my second Sony—the close-up one—and little GoPro is filming its little heart out siting there on the mantelpiece. It's so small, you really don't notice it.

CHEAP

So you spent $6,000+ on a "real" camera—well, for less than $3,000 you can buy ten GoPros. Crazy—no? Can you imagine a wedding shot with ten cameras? Top shots, reverse angles, friends and relations, close-ups at the altar. These days multi-cam is a cinch to edit. You have the tools. Do it!

LIGHTWEIGHT

Heavy cameras need heavy tripods. The GoPro is so light, you can hang it from a party helium balloon. I fix mine to 12' 5/8th aluminum tubing for top shots.

My big thrill is a new Steadicam Smoothee (who thinks of these awful names?). I bought mine from Amazon.com for $149.88.

In my past life, I owned a Steadicam Jr. for my Sony DSR-PD150. It just didn't work. Perhaps the camera was too heavy—I don't know. I practiced for days and got nowhere. When I moved to the States, it didn't.

HERO2 with tripod mount, Sennheiser mic, varifocal lens

The GoPro/Smoothee package is a different experience. Adjust with two simple balance controls. An hour of practice and you'll be making Hollywood-style Steadicam shots.

Picture your next wedding shoot—ten cameras in the church and you with a HERO2 on a Steadicam Smoothee (if I have to type *Smoothee* again, I'll throw up).

THE COOLEST OF THEM ALL

I've saved the OMG after market gadget 'til last. Run to Shapeways.com and buy the three-axis camera gimbal mount. They sell the four-piece fabricated cage—then buy three MKS DS470 servos from HobbyKing.com. See the GoPro gimbal video on YouTube and be blown away. With this gizmo you can pan, tilt and roll remotely. EyeOfMine has wireless transmitters and remote stop/start devices. Go crazy...

ARE WE THERE YET?

Soon children, soon; GoPro's WiFi BacPac and WiFi Remote are just around the corner. It's been a fun trip. Enjoy the ride.

GoPro, *étonne-moi.* **dv**

JAY HOLBEN

SPECULAR HIGHLIGHT SPECTACULAR

What Direct Reflection Is and How to Use It

Figure 1: Reflecting bare lights doesn't use specular highlights to our advantage.

Figure 2: Bouncing light off foamcore expands the apparent size of the source.

Welcome to a new ongoing feature in *Digital Video*, Adventures in Lighting, a monthly resource that will expand your understanding of light and lighting. For this first installment, I'll discuss specular highlights, what they are and how to use them.

By definition, a specular highlight is a mirror reflection of the light source on the surface of your subject. It can also be described as direct reflection. Properly utilized specular reflections help to define the shape of a glossy or highly reflective surface such as glass or chrome.

The classic example is a wine bottle. Pictured is a beautiful bottle of 2003 Francis Ford Coppola Rubicon Cabernet Franc, a favorite of mine. As you can see, it's a lovely dark bottle with very little fringe decoration. I'm going to use two ARRI 650W Fresnel lamps to light it.

If I use the lamps clean, what we see is a specular highlight of the lamps reflected off the black glass of the bottle—and they're just points of light. It's not pleasing; it's not helping to define the shape of the bottle. There is light, but we're not doing this beautiful, simple bottle any favors

by just pumping hard light onto it. *(fig. 1)*

What we need to do is to increase the apparent size of the light so it becomes a very large source reflected down the full length of the bottle.

In this case, I'm going to use large sheets of white foamcore—I'll bounce the Fresnels into the foamcore. By evenly filling the foamcore with light from the 650W Fresnels, I turn a 6" pinpoint of light into a 40" x 60" source of light.

Now what we're seeing is the mirror reflection of the large sheets of foamcore in the glass of the bottle. The large reflection helps to reveal the bottle's shape via silhouette. This is much more pleasing to look at than just the two spots of light and uses specular reflections to our advantage. *(fig. 2)*

This setup was a lot more complicated than just bringing in two large sheets of foamcore. The entire bottle is, for all intents and purposes, a mirror that reflects any source of light. I had to build up a lot of black around the bottle so as not to reflect myself or the room in the glass. Using duvetyn (black fabric) hanging on C-stands, I was able to surround the bottle in black. The bottle then reflects the black, which has no specific detail and makes the bottle's surface appear smooth and clean. *(fig. 3)*

Figure 4: Final image

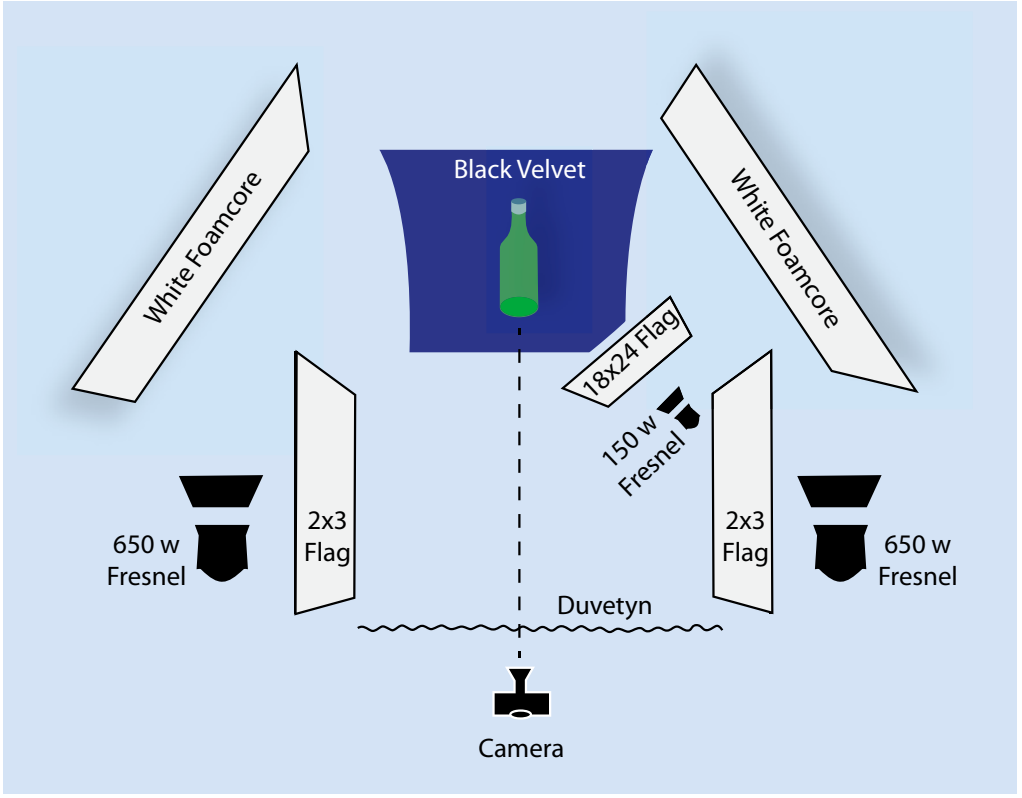

Figure 3: Lighting schematic

I also had to put up "siders," solid black flags on the sides of the 650W Fresnels, to keep the lights themselves from being reflected in the glass. I simply used 24" x 36" cuts of black foamcore on C-stands for the siders.

The camera itself, and me behind it, was also reflected in the bottle; I remedied that by hanging a large piece of duvetyn in front of the camera and cutting out a small hole to fit the lens through. This erased any reflection of me or the rest of the room from the surface of the bottle.

Finally, I shot the bottle as if it were an advertisement. In which case, the name on the bottle is very important. Bringing out those gold letters against the glass was no easy task. I used a 150W ARRI Fresnel positioned very high and pointing down at the bottle, spotting in the light on the gold letters. I then brought in another black foamcore flag—as close to the bottle as I could get it without being in the frame—and used it to cut off the specular reflection of the 150W lamp from the upper curve of the bottle. You can see that specular reflection in figure 2, but it's cut out of the final image by the flag. *(fig. 4)*

When you're dealing with direct/specular reflection, it is handy to remember the law of physics that says that the angle of incidence is equal to the angle of reflection. In other words, the precise angle that light strikes a glassy/glossy surface is the angle at which it will be reflected. *(fig. 5)*

This point may be demonstrated by shining a laser light into a mirror; you'll see that the angle of incidence (laser falling on mirror) is the exact angle of reflectance. This is an important rule to remember when using specular reflections, or when trying to remove unwanted reflections. Look at the reflection from the camera's position and note the angle the camera is to the glossy surface, then trace that angle back to the offending (or creative) source. This can be a considerable challenge on a curved surface such as the wine bottle, but with some practice you'll understand the principle.

This principle of specular reflections applies when photographing any glossy or reflective surface. In car photography, we use the same concept, but we utilize very large (typically 20' x 40' or larger) bounce or light sources to get a very large reflection in the surface of the car.

Any light source can have a specular

reflection in a glossy/reflective surface. The larger the light source, the more the reflection will help to define the shape of the surface. Foamcore is an excellent source as it is very smooth, has no texture, and will appear as a smooth highlight.

Properly utilized specular reflections help to define the shape of a glossy or highly reflective surface such as glass or chrome.

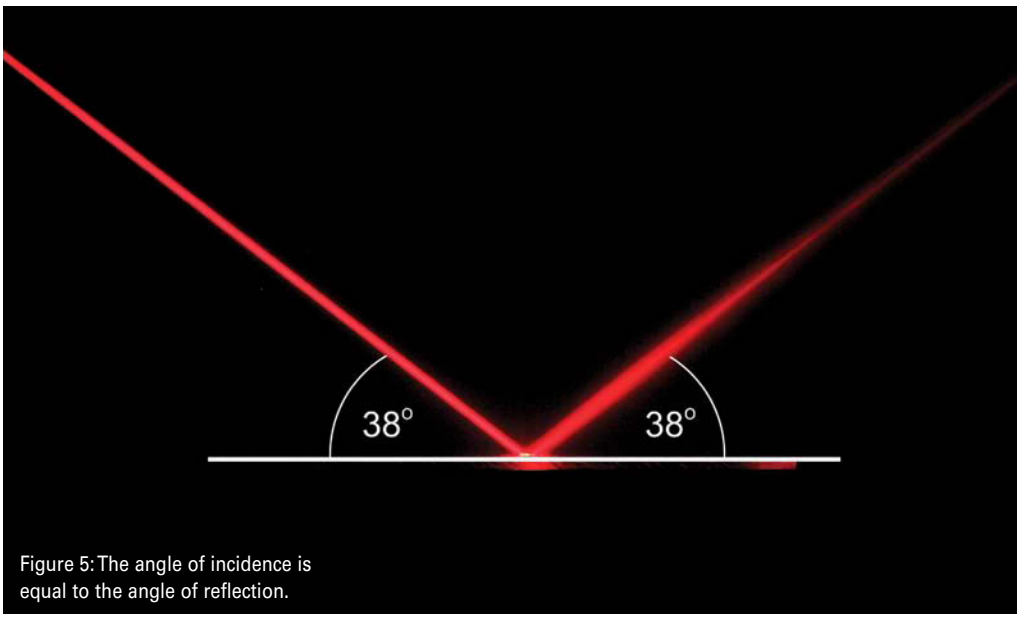

Figure 5: The angle of incidence is equal to the angle of reflection.

You can use any light-colored material to create your specular highlight, but be careful how reflective the surface is—if your material has any pattern or texture to it, that may show up on the subject. I could have used a softbox to create my specular highlights, but any wrinkles in the front diffusion of the box would also show up in the highlight.

Take a look through your favorite magazine. You'll see advertisements for cars, jewelry, drinks, silverware, even electronics—all employing specular highlights to show off the product's beauty. Looking at these ads and deconstructing the lighting schema is a great way to expand your knowledge and experience when you don't have a chance to play with the lights and toys yourself. **dv**

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Information on our open judging process and online application:

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TIPS TO CLIP

DICK REIZNER

ROLLING CASE

The tubular tripod cases many of us use protect tripod legs adequately, but the cases tend to roll around the car trunk. Anthony Asquew of Santa Clara, Calif., keeps his in place with a piece of 2 x 4 lumber with a hook-and-loop fastener stuck to one side. The board is placed next to the case so the hooks engage the loops in the carpeting and everything stays in place.

Some time ago I shared another tripod storage tip in which Brian Henderson stored and shipped his tripod in a hard-shelled golf bag case. It not only protects the tripod and has wheels that make it easier to "schlep," but he says some airlines do not charge when he checks his "golf clubs."

$AVING ON $TUDIO $PACE

A Boston video producer had been paying rent for a large studio that he used only once or twice a month. He finally decided that the benefit wasn't worth the expense and moved into smaller quarters. Of course, that raised the question of where to shoot the few productions that did require a large space.

The new office is in an industrial park that is home to almost 100 small businesses. Seeing an opportunity, the producer set up an arrangement with the management company under which he is kept informed of vacant units. When he needs extra space, he simply rents an unused office for a day or two.

The smooth cement floors and industrial electrical wiring of the units make them easy to work in, and a few pieces of seamless background paper hide any objectionable walls. Shooting in the evening avoids unwanted noise.

WIRE WRITING

If you ever wanted to repatch the many cables in that maze of wires and AC cords under your editing desk, this tip may help. Producer Mike Saxton of Miami, Fla., can easily identify specific cables because he labels each of them with bread bag tags. The small plastic tags attach easily to wires and will accept identification marks from a Sharpie. Mike adds to the available information by using different colored tags to indicate the type of signal the wire carries.

The same tip will work at your computer station or anywhere you need to identify cables.

A GRIPPING TALE

The Problem: You're on a shoot, far from a toolbox, when a screw-in filter becomes stuck on the camera lens. How can you get it loose?

The Tip: Val Marks had this problem and came up with an ingenious solution. He found he could drape a piece of flexible wire, audio cable or even twin lead AC lamp cord over the filter; then, pinching the wire just below the lens, use it as a wrench to unscrew the filter.

I have had many lens mechanics tell me they frequently wear rubber kitchen gloves to give themselves a better grip when disassembling an uncooperative lens.

NOW YOU SEE IT...

When you are shooting text from a book or magazine, you'll find that whatever is printed on the back side of the paper often shows through. You can usually clean up the image by placing a black piece of paper behind the page you're shooting. The black causes the image on the reverse side to disappear by making it part of a single solid color. From the front, you can't tell that it's there.

SHARE YOUR TIP

Now it's your turn to share a favorite shooting or production tip or question with your fellow professionals. Please send e-mails to tips@dv.com.

All submissions become the property of Reizner & Reizner. None can be returned.

JAY HOLBEN

LOOKING AT LENSES

Considerations for Each Camera (And Camera Operator)

Today, with the prevalence of large single-sensor cameras, the number of lens options for the HD shooter has increased exponentially. Not every lens will work with every camera, however. In a previous DV101 column I discussed crop factors, utilizing lenses designed for larger target (sensor) areas on smaller targets, and the changes in apparent focal length/field of view.

Lens choice gets a little more complicated than that, however, when you start to consider the different types of lens mounts and their *register*, or *flange focal distance*.

In the SLR and DLSR world, each camera manufacturer uses its own kind of lens mount. Each mount type is proprietary and does not interchange with other types of mounts without a physical adapter between the lens and the camera. In the world of video cameras, there are some standard types of mounts that nearly all camera manufacturers use, but this isn't the case when you're using SLR lenses. Nikon, Canon, Olympus, Pentax—they all use different lens mounts, and not all are interchangeable without an adapter.

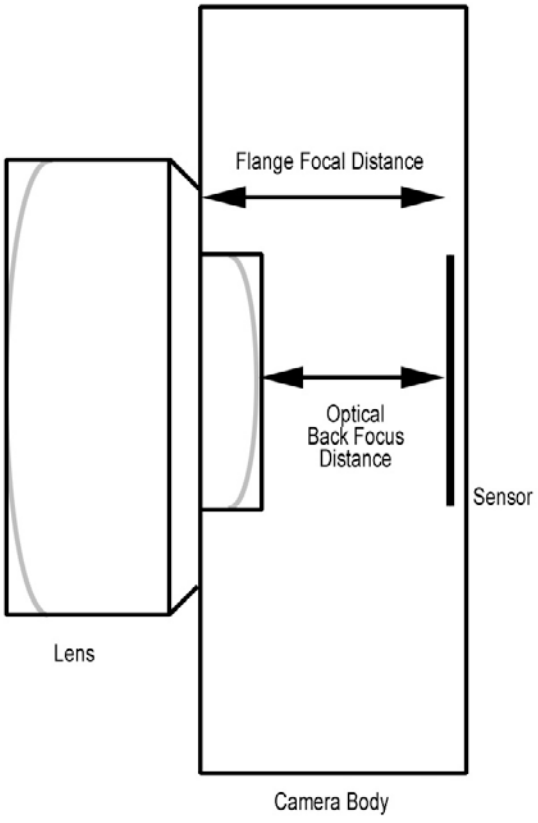
In the film world, although there are myriad lens mount formats for myriad camera styles, the ARRI PL (Positive Lock) mount arose as a professional standard for both 16mm and 35mm motion picture cameras. Many extraordinary PL-mount lenses have been manufactured by all of the great lens makers. The second most prevalent mount in the

motion picture world is the Panavision (PV) mount.

In order to know if you can use a particular class of lens on your new single-sensor HD camera, you have to know a few things first.

Although we all work in a rectangular world where our images are concerned, lenses project images in a circular pattern. In order for a lens to work with a given format, the diameter of the projected image circle must be equal or greater than the hypotenuse of the rectangular target. If the lens is designed for the format, or very close to it, you will have an excellent match. Many large-sensor HD manufacturers are now using the Super 35mm film aperture size (24.89mm x 13.98mm) as standard. In the stills world, this is classified as the APS-C (Advanced Photo System, Type C) group.

Any lenses designed for use with Super 35mm film cameras will also cover the area of these large HD sensors. This image area, however, is considerably smaller than that of standard still cameras (24mm x 36mm), which means that lenses designed for still cameras can be used on Super 35mm sensor cameras, but there will be a decreased field of view and increased apparent focal length—what is commonly called the "crop factor." Lenses designed for use with Super 35mm/APS-C targets cannot be used with "full-frame" cameras such as the Canon EOS 5D.



There's an additional factor to consider when you're looking at intermixing lenses with different cameras. In a single-target camera such as an SLR or large single-sensor digital cinema camera, there is a fixed distance from the rear of any lens mounted on the camera to the sensor plane. This distance is called the *flange focal distance* (sometimes it's called the *register*). It is measured from the point at which the back of the lens mount connects with the front of the camera's mount to the target/sensor itself. This distance is different for different camera manufacturers, different types of cameras and different photographic media.

All lenses designed for a particular camera system are designed to work with that system's fixed flange focal distance. This is how Canon knows that all of its EF lenses will work with any Canon EF body; every Canon body has a fixed flange distance of 44mm. In the PL-mount world, all cameras that have PL mounts have a fixed 52mm flange focal distance. This large distance, which is required to accommodate the rotating shutter in reflex motion picture cameras, has the benefit of making these lenses compatible with a lot of other camera systems.

You can use a lens designed for a *larger* flange focal distance on a camera with a *smaller* distance by merely applying a lens adapter that increases the camera's smaller distance to be equal to that of the lens; however, you cannot really use a lens designed for a smaller distance on a larger camera. In the latter case, the lens will not be able to focus to infinity (or even closer distances), and your lens' focus witness marks will also be off.

Interestingly, expanding the flange focal distance greater than the lens is designed for will turn the lens into a macro lens, increasing its close-focus ability. This is generally what a borescope tube does to lenses.

In optical design, many lens' rear elements are actually positioned behind the mounting point—and there is a difference between the flange focal distance and the optical back focus distance, which is the measurement from the edge of the rear optical element of the lens to the target.

It is considerably easier to manufacture a higher-quality lens if the rear element is very close to the target. The greater the distance that the lens has to project the image, the more aberrations that have to be manufactured out.

In HD cameras that don't require a spinning shutter or a reflex mirror, the lens can be positioned very close to the target, which allows the manufacturer to create inexpensive high-

Camera System	Mirror	Mount Type	Target Size	Register / Flange Focal Length
Fujifilm X-Pro1	No Reflex Mirror	Bayonet	35mm MP	17.7 mm
Sony Alpha NEX E-Mount	No Reflex Mirror	Bayonet	35mm MP	18 mm
Micro Four Thirds	No Reflex Mirror	Bayonet	Smaller than MP	20 mm
Minolta/Leica M bayonet	No Reflex Mirror	Bayonet	35mm Stills	27.8 mm
Leitz/Minolta CL, Minolta CLE	No Reflex Mirror	Bayonet	35mm Stills	27.8 mm
Olympus E, Panasonic Lumix DMC-L, Leica Digilux 4/3	No Reflex Mirror	Bayonet	Smaller than MP	38.67 mm
Canon FD	Reflex Mirror	Bayonet	35mm Stills	42 mm
Canon EOS EF "Full Frame"	Reflex Mirror	Bayonet	35mm Stills	44 mm
Canon EOS EF-S APS-C	Reflex Mirror	Bayonet	35mm MP	44 mm
Pentax K	Reflex Mirror	Bayonet	35mm Stills	45.46 mm
Olympus OM	Reflex Mirror	Bayonet	35mm Stills	46 mm
Nikon F-Mount	Reflex Mirror	Bayonet	35mm Stills	46.5 mm
Leica R	Reflex Mirror	Bayonet	35mm Stills	47 mm
Contax-N	Reflex Mirror	Bayonet	35mm Stills	48 mm
ARRI PL-Mount	Spinning Mirror	Breech Lock	35mm MP	52 mm
Panavision PV-Mount	Spinning Mirror	Breech Lock	35mm MP	57.15 mm

quality lenses. Additionally, these cameras with very small flange focal distances can be easily adapted to work with higher-end lenses created for larger flange focal distances, such as the PL and PV lenses.

The Panasonic AG-AF100, which is a Micro Four Thirds camera ("micro" for the lack of a reflex mirror), has an extraordinarily shallow flange focal distance of 20mm, making it compatible with nearly any lens out there (as long as the physical barrel diameter of the lens does not exceed that of the camera's mount) that will work with Micro Four Thirds, Four Thirds, APS-C, Super 35mm, APS-H and full-frame cameras.

The table above lists several camera and lens systems and their respective flange focal distances. Generally speaking, if you have a camera with a small flange focal distance, you can use a greater variety of lenses with it.

Notice that the Canon FD mount, which was the universal standard for Canon SLRs, cannot work with the EOS EF or EF-S, the new standard for DSLRs. The FD has an FFL of 42mm, whereas the EOS has an FFL of 45mm. However, PL lenses, which have an FFL of 52mm, can work on the EOS cameras (requires additional modification beyond an adapter) because they have a larger register than the camera system. **dv**

Sincere thanks to Guy McVicker, manager of optics at Panavision, for his generous assistance in wading through the mucky mire of my brain to clear up a few questions for this piece.

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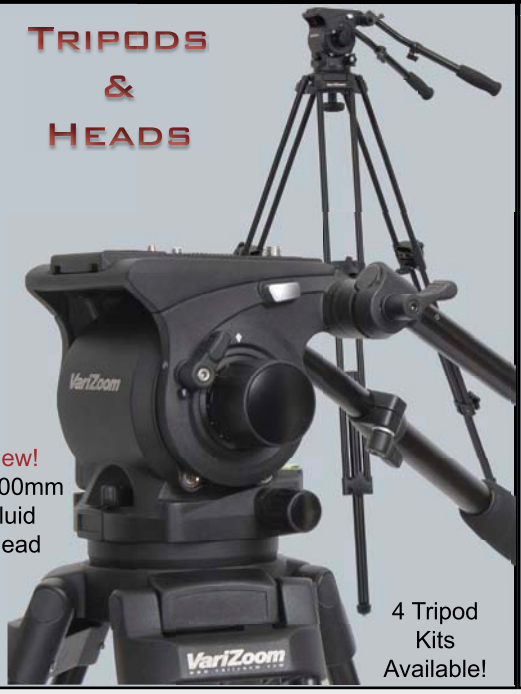

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SONY HDR-TD20V
3D HD Handycam Camcorder

NEW

- Shoot full HD 3D in 1920 x 1080 60p/24p
- Dual 1/4.0" back-illuminated Exmor CMOS sensors
- Dedicated 2D/3D switch
- 3.5" LCD (3D viewing without 3D glasses)
- Optical 10x & 17x extended zoom
- Optical image stabilization
- 5.1 ch surround mic
- Microphone & headphone inputs

20 Mega Pixels

#SOHDRTD20VS

AVCHD 3D

Panasonic HDC-HS900
3 MOS HD Hard Drive Camcorder

- Internal 220GB hard disk drive
- SD/SDHC/SDXC card slot
- 3 x 3.05MP 1/4.1" 3MOS sensors
- 1080/60p recording capability
- Optical image stabilization
- Leica Dicomar Lens
- 3.5" widescreen LCD
- Manual ring over focus, zoom or exposure settings
- 3D recording with optional VW-CLT1 3D lens
- Relay and time lapse recording

14 Mega Pixels

#PAHDCHS900

AVCHD

Canon VIXIA HV40
HDV Camcorder

- 1/ 2.7", 2.96MP HD CMOS sensor with RGB primary color filter
- Frame rates: 60i, native 24p (records at 24p), 24p cinema, and 30p (at 60i)
- DIGIC DV II image processor
- Canon HD 10x optical video lens
- Instant Aufo Focus w/ext. sensor
- SuperRange optical stabilization
- 2.7" widescreen LCD screen • External mic input
- Smooth variable zoom with 3 fixed zoom speeds

3 Mega Pixels

#CAHV40

HDV

SONY HXR-MC50U
Pro Solid State Camcorder

- 1920 x 1080 HD resolution
- 1/2.88" back-illuminated Exmor R CMOS sensor
- 64GB internal memory
- Memory Stick / SD/SDHC media card slot
- 10x wide G series lens
- Assignable manual dial controls
- 3.5" wide LCD
- Geotagging with built-In GPS
- Optical image stabilization

12 Mega Pixels

 # SOHXRMC50U

AVCHD

Canon XA10 / VIXIA HF G10*
Professional HD Solid State Camcorder

- 64GB Internal and Dual SDHC/SDXC card slots with relay recording
- 1920 x 1080 CMOS Image Sensor
- Canon 10x HD Video Lens
- 8-Blade Iris and Manual Focus Ring
- DIGIC DV III Image Processor
- 24Mbps Recording (AVCHD)
- 3.5" High-resolution touch panel LCD and EVF
- Dual XLR terminals

*** Same as XA10 without handle & XLR audio adaptor**

#CAXA10 / #CAHFG10

AVCHD

Panasonic HDC-Z10000
Twin-Lens 2D/3D Camcorder

- Two independent 3MOS sensors
- HD Stereoscopic 3D recording
- Dual Integrated 10x Lenses (12x in 2D)
- Triple manual rings: focus, zoom and iris
- Multi View Coding (MVC) Recording in 3D 1080p60
- 3.5" 3D compatible LCD
- Dual XLR Inputs
- 2D/3D Still Image Recording

#PAHDCZ10000

AVCHD 3D

Panasonic AG-HMC40
3-CMOS Pro HD Solid State Camcorder

- 1080 and 720 HD resolution recording on SDHC cards
- 3 1/4" 3-MP CMOS HD image sensors
- AVCHD MPEG-4 AVC/H.264 encoding
- 10.6-megapixel still capability
- 12x optical zoom
- 2.7-inch LCD monitor
- XLR audio input, HDMI output, USB 2.0

#PAAGHMC40

AVCHD

JVC GY-HM150U
3-CCD ProHD Solid State Camcorder

- Supports 1920/1440 x 1080, 1280 x 720 HD formats in 35, 25, and 19Mb/ps with variable frame rates
- Dual SDHC card slots (loop, pre-record)
- Captures native QuickTime files
- Fujinon 10x HD lens
- Optical image stabilization
- Dual XLR audio, with phantom
- Color viewfinder and large LCD monitor

#JVGYHM150

ProHD

Panasonic AG-HMC80
3-CMOS Pro HD Solid State Camcorder

- 3 1/4.1 CMOS sensors
- 1080 or 720 HD recording
- SD/SDHC media card slot
- 12X optical smooth zoom lens
- High-definition and standard-definition recording
- Pre-record & interval recording
- Optical image stabilization
- Dual XLR/3.5mm mic-in inputs
- HDMI, USB, DV, Component terminals

10 Mega Pixels

#PAAGHMC80

AVCHD

Panasonic AG-HPX250
3-MOS HD Handheld Camcorders

$730 Amex Card Rebate
w/ purchase of AG-HPX250 & 64GB P2 Card (Exp. 3-31-12)

- 3x 1/3", 2.2 Mp CMOS sensor - 18-bit dsp
- 22x optical zoom lens
- 1080p 1080i 60/p30/p24 & 720p60
- Three rings; Manual Zoom, Focus & Iris
- HD-SDI & HDMI output
- 59.94 Hz / 50 Hz switchable
- Slow/quick motion recording mode
- P2 card and DVCPRO mode recording

#PAAGHPX250

DVCPRO HD

SONY HDR-AX2000
3-CMOS AVCHD Flash Camcorder

- Three 1/3" CMOS Exmor sensors
- Records to Memory Stick PRO Duo, SD/SDHC Cards (Dual media slots)
- 1080/60i, and 24p/30p AVCHD recording
- 20x zoom G-Lens (29.5mm wide)
- Zoom, focus, and iris rings
- Dual XLR inputs • 3.2" Xtra Fine LCD
- Low-light (1.5 LUX) capabilities
- CinemaTone Gamma and CinemaTone Color Control

#SOHDRAX2000H

AVCHD

SONY HXR-NX3D1
Professional 3D Compact HD Camcorder

- Dual 1/4" Exmor R CMOS sensors
- Two Sony G lenses (10x optical in 3D)
- 96 GB internal memory
- One SD or Memory Stick card slot
- 3.5" LCD (view 3D glasses-free)
- Full 1920 x 1080 in 3D and 2D
- 3D modes: 60i, 50i, 24p (28 Mb/s)
- 2D modes: 60p, 50p, 60i, 50i, 24p, 25p
- Active SteadyShot in 3D
- Dual XLR inputs (line / Mic / Mic+48V selectable)

#SOHXRNX3D1U

AVCHD

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Canon XF100 / XF105
HD Professional CF Camcorders

- 1/3" CMOS 1920 x 1080 CMOS sensor
- Dual CF card slots
- 50Mbps MPEG-2 recording
- Canon's MPEG-2 4:2:2 color sampling
- 60p/60i, 30p, 24p MXF File Format
- 10x HD zoom lens
- 3.5" 920K dot LCD monitor
- Stereoscopic 3-D recording capabilities
- Dual XLR inputs • Waveform Monitor

XF105 Step-up: HD/SD-SDI, SMPTE Time Code, Genlock

#CAXF100 / #CAXF105

AVCHD

SONY HXR-MC2000U
Shoulder Mount AVCHD Pro Camcorder

- 1/4" 4.2Mp, ClearVid Exmor R CMOS sensor
- Built-in 64GB hard drive
- SD/SDHC/SDXC & Memory Stick slot
- 1920 x 1080i AVCHD (24Mbps)
- MPEG-2 SD Mode (9Mbps)
- 12x wide angle Sony G lens
- Optical SteadyShot stabilizer
- 2.7" ClearPhoto LCD
- Manual lens ring with assignable parameters

4 Mega Pixels

#SOHXRMC2000U

AVCHD

SONY NEX-VG20
Interchangeable Lens HD Camcorder

NEX-VG20H

- Exmor APS-size HD CMOS 16.1 Mp sensor
- Records 1920 x 1080 @ 24p, 60i, 60p
- Memory Stick PRO Duo/SD/SDHC/SDXC card slot
- Sony NEX E series lens mount (A series option)
- 24 Mb/s AVCHD MPEG-4 AAC-LC
- 3.0" LCD and CVF
- Quad-capsule microphone & 5.1 Sound
- Cinematone Gamma / Color • Manual audio control

#SONEXVG20 (Body Only) *#SONEXVG20H with lens*

AVCHD

SONY NEX-FS100UK
Super 35mm Sensor HD Camcorder with Lens

- Exmor Super 35mm CMOS image sensor
- Includes 18-200mm Zoom Lens
- E-mount interchangeable lens mount system
- HDMI 4:2:2 uncompressed
- 1920 x 1080p 28Mbps recording
- 3.5" XtraFine LCD screen
- 1920 x 1080p slow & quick motion
- Record onto SD/SDHC/SDXC, Memory Stick cards, or Sony HXR-FMU128 (optional) • HD MPEG-4 AVCHD format

#SONEXFS100UK ***$5,599.00***

AVCHD

Canon XF300 / XF305
3 CMOS Solid State HD Camcorder

- Record HD 1080/720 onto Compact Flash cards
- 50Mbps MPEG-2 4:2:2 recording
- 3 1/3" 2.37Mp CMOS sensors
- 18x Canon HD L series lens
- DIGIC DV III image processor
- 4" 1.23 Mp LCD monitor
- 1.55 Mp Color EVF
- Over and under crank

XF305 Step-up: HD-SDI Output, Genlock & SMPTE Time Code

#CAXF300 / #CAXF305

HD

Panasonic AG-HPX370
3-CMOS Pro Solid State Camcorder

- 10-bit, 4:2:2, native 1080 and 720p HD resolution in variable frame rates
- AVC-Intra 100 and 50 codecs
- Two P2 card slots (hot swapping, loop, pre-record)
- 3 advanced 1/3", 2.2 MP CMOS sensors • HD-SDI output
- 20-bit digital signal processor
- 17x Fujinon HD lens • Built-in scan reverse mode
- Waveform and vector scope display

#PAAGHPX370

DVCPROHD

SONY HXR-NX5U
3-CMOS NXCAM Flash Memory Camcorder

- Three 1/3" Exmor CMOS sensors, with a ClearVid array
- Capture uses Memory Stick PRO Duo / SDHC Cards, with relay record capability (optional HXR-FMU128 flash memory unit)
- 20x wide G series lens
- HD-SDI & HDMI output, SMPTE Time Code in/out, Dual XLR inputs
- Built-in GPS system • 3.2" Xtra Fine LCD

#SOHXRNX5U

AVCHD

Panasonic AG-AF100
Professional Memory Card Camcorder

$500 Amex Card Rebate Exp. 3-31-12

Lens Optional

- Large 4/3-type MOS sensor
- Micro four thirds lens mount
- Uses still & cinema lenses
- Two SDHC/SDXC memory card slots (Relay Recording)
- AVCCAM Recording 1080i/p, 720p variable frame rates
- Optical low-pass filter
- HD-SDI, HDMI output, Dual XLR

#PAAGAF100

AVCCAM

SONY PMW-EX1R
XDCAM EX Solid State HD Camcorder

$400 Rebate Exp. 3-31-12

- SxS Memory Card Recording w/800Mb/ps Data Transfer
- DVCam Recording • Cache Recording
- Image Inversion Function
- 1/2-inch Exmor 3 CMOS Sensors
- 1080i/720p Switchable
- Multiple Frame Recording
- 14x HD Fujinon Lens
- 3.5" LCD • Full Manual Focus Ring
- Over- and Under-cranking

#SOPMWEX1RQ ***$6,299.00***

XDCAM EX

SONY PMW-EX3
XDCAM EX Solid State HD Camcorder

$500 Rebate Exp. 3-31-12

- Interchangeable 1/2" bayonet lens mount, incl. Fujinon 14x5.8 lens
- 3 1/2" Exmor CMOS image sensors that shoot full raster 1920x1080 hi-def imagery • Recording on removable SxS flash memory cards
- 1080 and 720 shooting modes with selectable bit rates in both PAL and NTSC standards • 3.5" LCD
- 8-Pin remote studio connectivit

#SOPMWEX3Q ***$8,320.00***

XDCAM EX

Panasonic AG-HPX170
P2HD Pro Solid-State Camcorder

- Two P2 card slots recording HD (1080i and 720p) and SD (480i) f
- 20 variable frame rates
- 3 1/3" progressive CCD sensors
- HD/SD-SDI output
- 13X Leica Dicomar wide zoom lens
- Enhanced metadata management
- Optical Image Stabilization Dual XLR inputs
- 3.5" LCD monitor • In-camera Waveform monitor Vectorscope and two Focus assist

#PAAGHPX170Q

DVCPROHD

SONY PMW-F3K
Super 35mm HD Camcorder Kit

$800 Rebate Exp. 3-31-12

- Exmor Super 35 CMOS image sensor
- Includes 35mm, 50mm, 85mm lens kit
- PL lens mount, 35mm Cine lens compatibility
- 10-bit 4:2:2 HD-SDI
- Two SxS memory card slots
- Interlace/Progressive modes
- D-SDI Dual-link output
- 3D-LINK option

#SOPMWF3K ***$19,890.00***

XDCAM EX

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ACT OF VALOR

(continued from page 20)

editing and Adobe Premiere (CS4 and later CS5) to manage the media files in their native format. Both systems were running off HP 8600 workstations. (Bandito Brothers is an HP shop for most of its hardware.)

As the Avid EDL developed, Rosenberg explains, the Premiere timeline would update. Meanwhile, as the cut evolved at Bandito Brothers, After Effects artists could pull scenes off the company's SAN, work on them and post the updated files; Premiere would then update the sequence.

Rosenberg, who has a longstanding relationship with Adobe, found this setup efficient and productive. The editors could work the way they were most comfortable, while Premiere's advanced capabilities to handle native H.264 material and its interoperability with other programs such as After Effects made it a great tool for what might traditionally have been called "online" duties.

The CTO explains how the post setup helped get the most out of the cameras. "The 5D shoots full Rec. 709 color space, as opposed to the 'legal 709' that some other digital cameras use. Those only write colors 16-235," he says. "The 5D was unique at the time in that it could shoot full-range 0-255. What Adobe was doing with Production Premium was opening up that full range of colors. At that time, if you opened a 5D file in Final Cut Pro, it would look really contrasty. To some people that looks pleasing to the eye, but it means you're losing information. With Production Premium, we could keep the full range."

Lt. Rorke reacts to his frag grenade during a rescue mission.

He adds that the HP DreamColor Professional 30-bit LCD displays they used in the field and at Bandito Brothers enabled the team to really see that additional color information—in a way that other monitor technologies couldn't deliver.

As the film came together, the company used Cinnafilm Dark Energy Texture Manager to help clean up the digital noise and print back some "grain" to give everything a more filmic quality. The also used RE:Vision Effects' Twixtor software to convert frame rates—primarily all the 30 to 24.

Virtually all of the work on *Act of Valor*, from planning to delivery (except sound mix and color grade), was completed in-house at Bandito Brothers. Concludes Rosenberg, "That's something we're incredibly proud of." Mission accomplished. **dv**

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PRODUCTION DIARY

STEFAN SARGENT

A FOGGY DAY IN JENNER TOWN

It Had Me Low, And It Had Me Down

(Above) The Ecstasy: I have a vision splendid...
(Left) We Can Do It, Yes We Can: Derek practices the shot.
(Far left) The Agony: No, we can't! All is lost... Cry me a river.

THE HARVEST

We start shooting the vineyard at dawn. Jamie, our star winemaker, is helping the pickers and loading the truck with six tons of pinot noir grapes. He drives down the mountain ridge to the coast and then inland to the winery. I have a camera stuck to the windscreen shooting Jamie and the amazing views.

Now I need a 'copter sequence. Jamie has agreed to re-create the drive. The must-have shot is Jamie driving the truck with his precious fruit along the Pacific Coast Highway. I have the Google Earth photo taped to my wall. I look at it every day. I will get this shot—no matter what!

OBSTACLES THERE TO OVERCOME

1 The truck is not Jamie's but the winery's. The owner says Jamie can borrow it again, but not until the last harvest is in.

2 We need to load the truck up with six tons of grapes. Cost: approximately $30,000. Impossible. Tricia cuts plywood to fit the top bins and paints them a dark grape color. All we need is a thin layer of grapes. It's late in the season, all the grapes have been harvested. Tricia finds a vineyard with merlot grapes that nobody wants. We buy them at a discount rate.

3 I need an affordable helicopter. A real 'copter would cost $5K—plus lots of air-to-ground communication problems. I've seen Derek's remote control helicopter shoots on the internet. I contact him and tell him my tiny budget.

THE DAY BEFORE

Tricia collects the merlot grapes and drives to the winery, where Jamie is loading up the truck with empty bins.

It's a beautiful day in Jenner, Calif. I'm with Derek and Martin, his camera operator, rehearsing the RC 'copter shot. That night in the motel, we look at the tests. Perfect. I prepare my Oscar speech.

I VIEW THE MORNING WITH MUCH ALARM

6 a.m.: I open the motel door. Fog. Thick fog. Where's the car park gone? I lead the way in my car—headlights on. Where's the road? The fog is so thick, I can hardly see the car in front of me. Eventually we make Jenner, where Tricia and Jamie are waiting with the winery truck "filled" with grapes. It's fog, fog, everywhere. Derek can't fly.

BUT THE AGE OF MIRACLES, IT HASN'T PAST

"Let's take some shots up at the winery." We drive up and up; suddenly it's a perfect day. Derek takes aerial shots of the grape-laden truck leaving the vineyard. The last shot is Jamie disappearing into thick fog. Then the 'copter vanishes, too. "It's gone! If I can't see it, I can't control it." But he does and magically it flies back out of the fog. A miracle.

Derek saves the 'copter, I have some great aerials, and in foggy Jenner Town, the sun was shining everywhere. **dv**

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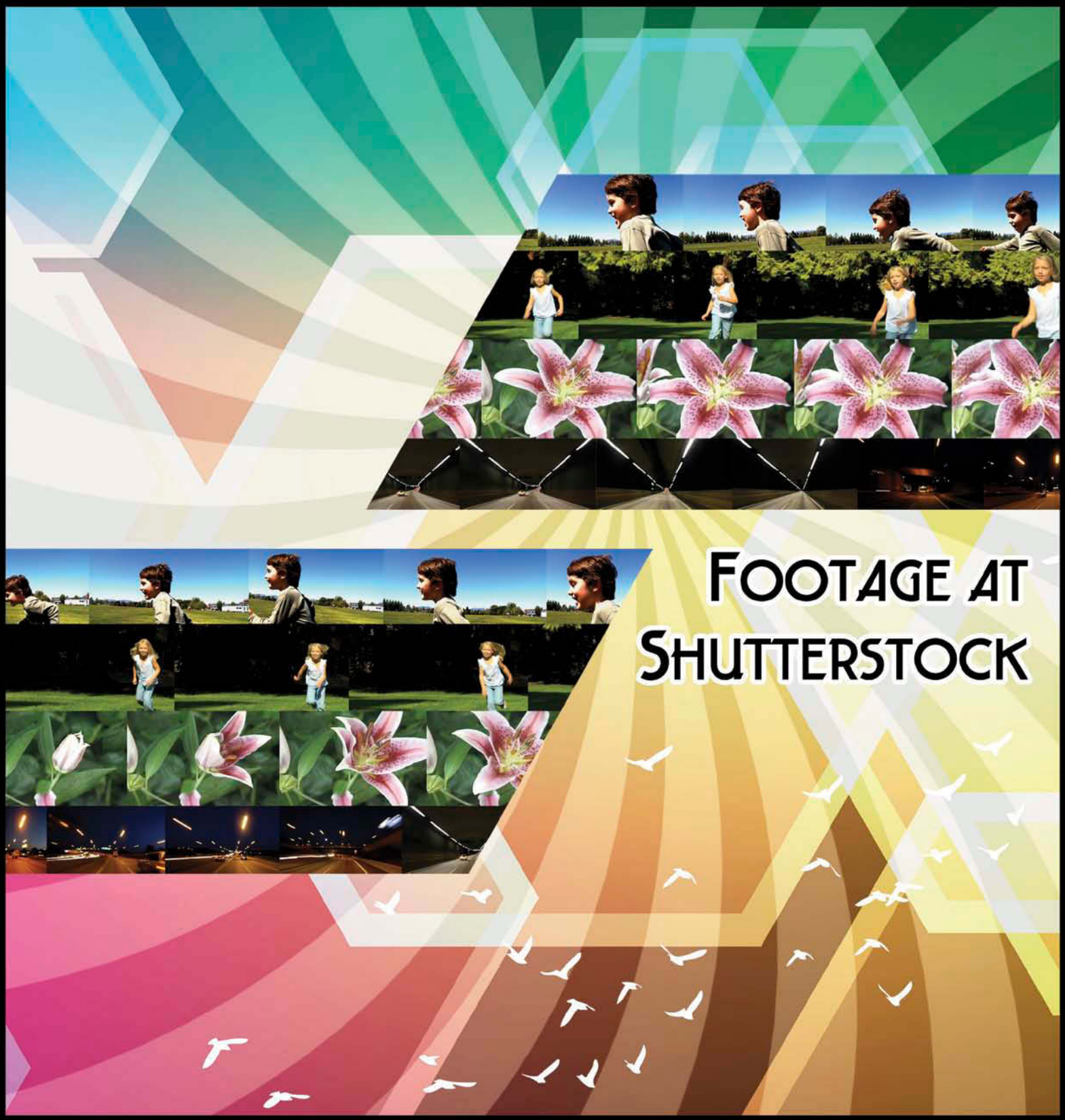

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